THE AMERICAN GAS LIGHT JOURNAL

REDMAN & KENNY, N.Y.

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME LXXXIV., No. 26. Whole No. 1,620. | NEW YORK, MONDAY, JUNE 25, 1906. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. C. E. SANDERSON, Manager. THOMAS J. CUNNINGHAM and ELBERT P. CALLENDER, Editors.

Published on each Monday of the year, at No. 42 Pine Street, New York.

Telephone.—2996 John.

Terms of Subscription, Including Postage.—For the United States and Canada, $3 per annum. European countries, $5 (£1—25 francs).

Remittances should be made either by post office order, express money order, registered letter, or bank draft on New York, payable to the order of A. M. Callender & Co.

Correspondence.—Wishing to make this JOURNAL a gazette of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, correspondence is solicited for publication from all who make the study of those subjects a pleasure or a profession.

Collections are invariably made directly from this office for subscriptions, advertisements, etc. We have agents to solicit the same, but they are not authorized to receipt for money.

The American News Company, Nos. 39 and 41 Chambers street, New York, are agents for this JOURNAL. Newsdealers will send orders to them. All payments to be made in advance. Single copies, 10 cents.

Books.—We will forward by express, at publisher's lowest rates, any book—scientific or otherwise—to any address in the United States or Canada. We would suggest to our patrons that to avoid the risk and expense consequent on sending us the money (we do not send books C. O. D.), that orders for books be sent us through the Purchasing Department of the American Express Company.

The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

CONTENTS.

An Asterisk (*) denotes an illustrated article.

EDITORIALS—

Briefly Told 1101

The New York Injunction Holds—Notes.

Twenty-ninth Annual Meeting, Western Gas Association—Official Report—Revised by the Secretary—Continued from page 1060... 1102

First Day, Morning Session—Letters and Telegrams of Regret—First Day, Afternoon Session—Regulation of Rates, by Mr. George McLean—Discussion.

Twenty-second Annual Meeting, Ohio Gas Light Association—Official Report—Continued from Page 1069..... 1105

Third Day, Morning Session—Discussion on Mr. R. G. Congdon's Paper—The Question Box—Report of the Board of Revision of the Question Box—Report of Committee on Select Test Methods—Report of the Committee on Nominations—Adjournment.

Lead Wool and Solid Pipe Joints 1112

ITEMS OF INTEREST FROM VARIOUS LOCALITIES 1113

Contract for the St. Louis Gas Construction Company—Mr. Frederick J. Mayer Goes into Consulting and Contracting—Reduction at Leominster, Mass.—Extensions by the Poughkeepsie (N. Y.) Company—Watertown (N. Y.) Light and Power Company Incorporated—Franchise Granted at Great Falls, Mont.—Explosion at the Milwaukee (Wis.) Works—Mr. S. M. Highlands Retires from Business—Annual Meeting at Binghamton, N. Y.—Dr. Love Investigates Kingston (N. Y.) Gas—Franchise for Memphis, Tenn.—Cleveland (O.) Gas and Electric Fixtures Company Incorporated—Franchise for Stoughton, Wis.—Betterments at Allentown, Pa.—Reduction at Macon, Ga.—And Many Other Items.

Recent Patent Issues..... 1114

The Market for Gas Securities..... 1515

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

BRIEFLY TOLD.

THE NEW YORK INJUNCTION HOLDS.—Judge Lacombe, in the United States Circuit Court, Manhattan, handed down a decision continuing the restraining order he gave 3 weeks ago, holding up the operation of the 80-cent gas law. He decides that the penalties and other provisions of the law should be enjoined from action pending a decision of the United States Supreme Court on the constitutionality of the law. The defendants who are enjoined are the Attorney General, the District Attorney, the State Gas Commission and the city of New York. The opinion intimates that some value should have been placed on the company's franchises. No change is made in the original order so as "to undertake to restrain the actions of individual consumers who are not parties to the suit and have not been served with process."

The decision says in part:

"Irrespective of any action of the Gas Commission, the Legislature has itself fixed the 80-cent rate, and there is nothing to indicate upon what it predicted such action. For aught that we know, it may have reached the conclusion that the commission was in error in not including the franchises at their taxable value in the estimate of complainant's property; and may, at the same time, have concluded that 7—or 6, or 5—per cent. was a proper return to be received by the owner of such property. This brings us to the fundamental question presented by the pleadings: Is the rate fixed by the Legislature, 80 cents, so low as to be unjust or confiscatory? As was indicated at the outset of this opinion, there can be no intelligent answer given to this question until the whole case is presented upon testimony taken, not *ex-parte*, but according to the rules for taking testimony in equity causes. Therefore, until the court at final hearing may have the opportunity to pass upon such a record, although the existing order is continued, its terms will not be enlarged so as to undertake to restrain the actions of individual consumers, who are not parties to this suit and have not been served with process. The order continuing the injunction should contain a clause providing that in the event of complainant failing to succeed finally in the litigation the preparation of the papers required for refund and the distribution of the amounts due to the respective consumers (including such interest as the condition of the fund, after paying expenses of administration, may warrant) shall be performed by the company; and upon its being shown that refund has been made to any consumer by crediting the amount due him upon any current monthly bill or bills, or otherwise, such amount shall be returned to the company, week by week or at such shorter intervals as the court may approve. It will also contain a further clause that all consumers who may change their address or may remove out of the borough should notify the Clerk of the Court or the Gas Company of such change of address, to the end that whatever refund they may be eventually found entitled to may be paid to them at their new address without their being put to the inconvenience of coming to the special master or to the company to collect it."

LIBRARY OF CONGRESS JUN 25 1906 SMITHSONIAN DEPOSIT.

NOTES.—

SINCE the incorporation of the Watertown (N. Y.) Light and Power Company and the announcement that it was a consolidation of the

Watertown Gas Light Company and the Watertown Electric Company it has been rumored that one effect would be felt in an increase of price and that John B. Taylor would not be connected with the new corporation. Mr. Taylor says in an open letter: "If I am connected in any way with the new organization, and I expect to be, I hope that as soon as the process of construction has been passed through by these Companies, probably about December 1, a schedule of prices both for gas and electricity will be arranged that will give the consumers a substantial reduction from the present prices." Attention is also invited to the fact that the Watertown Gas Light Company, of whose stock Mr. Taylor is a principal owner, has for two years been engaged in building a new plant and that it will probably be completed by next November or December, and that contracts have been entered into involving the expenditure of several hundred thousand dollars for the erection and equipment of new electric light and power plants.

THE new gas plant at Calumet, Mich., will cost $50,000.

MR. KERR MURRAY MITCHELL, General Manager of the St. Joseph (Mo.) Gas Company, was in Kansas City, Mo., to attend the first annual meeting of the Natural Gas Association of America, held there on June 12th and 13th; which was attended by prominent natural gas men from all the fields in the United States. Mr. Mitchell is President of the Association.

THE Greenfield Gas Company, of Greenfield, Mass., are about to enlarge their capacity by installing 2 new benches of 6's.

SEVERAL months ago the Detroit City Gas Company, made the purchase of the property having a fronting of 60 feet on Washington avenue, and 100 feet on Clinton street, for a location for their permanent city home. Mr. C. M. Harmen, representing Mr. Thomas W. Palmer from whom the purchase was made, and Mr. T. H. Welch, of Welch Bros., the buyers. The price paid was about $80,000. Definite plans for the new structure have not been determined upon, but will be decided soon and architects engaged.

IT is gratifying to notice that there is a demand for the extension of the local gas system at Wakefield, Mass., for the more consumption under present conditions the cheaper can gas be sold.

THE E.W. Clark & Co. syndicate, of Philadelphia, has purchased the interests of the Peoria (Ills.) Gas and Electric Company, and Mr. Emil G. Schmidt, now General Manager of the utilities at Springfield, Ills., owned by the Eastern syndicate, will take charge of the newly purchased interests after July 1st.

THE United Gas Improvement Company, of Philadelphia, has declared a dividend of 5 per cent., payable July 14.

MR. MARTIN KELLEY, foreman of the construction force in charge of the erection of gasholders for the Davis & Farnum Company, will complete his work at Malden, Mass , next week. Mr. Kelley has had charge of the erection of a huge gasholder for the Malden Gas Company, the work covering a period of several months.

MR JOHN GRIBBEL, of John J. Griffin & Co., Philadelphia, Pa., met with a serious accident in New York, on Saturday, June 16th, by having his kneecap fractured. His many friends hope he will soon be out and around. He is doing well and resting comfortably.

NEWS has been received that the securities of the New Orleans Railway and Light Company have been listed in the New York Stock Exchange. The information came direct to Mr. E. C. Foster, President of the New Orleans Railway and Light Company, who promptly communicated the fact to the New Orleans Stock Exchange, where it was received with satisfaction and delight. As this is the first time in the financial history of the country that a strictly New Orleans security has been listed in the New York Stock Exchange and received the stamp of its approval, the event calls for due comment as to its significance and import.

THE Standard Gas Light Company has declared a semi-annual dividend of 1½ per cent. on its common stock, a reduction of 1½ per cent. from the previous payment. The usual semi-annual dividend of 3 per cent. was declared on preferred stock. The dividends are payable June 30. Books close June 20 and reopen July 2.

THE Texas and Pacific Coal Company has declared the regular quarterly dividend of 1½ per cent. payable June 30. Books close June 20 and reopen July 2.

THE Central Coal and Coke Company has declared the usual quarterly dividends of 1½ per cent. on its preferred and 1½ per cent. on its common stock, both payable July 16 to stock of record June 30.

[OFFICIAL REPORT—REVISED BY THE SECRETARY—CONTINUED FROM PAGE 1060.]

THE TWENTY-NINTH ANNUAL MEETING, WESTERN GAS ASSOCIATION.

HELD IN CLEVELAND, O., MAY, 16, 17 AND 18, 1906.

FIRST DAY—MORNING SESSION.

The President—The local Committee of Arrangements have made preparations to have a photograph of the members of the Association taken this morning, and Mr. Persons has gone down stairs to endeavor to get a larger attendance of members. In the meantime we will have the Secretary read a number of regrets that we have received.

LETTERS AND TELEGRAMS OF REGRET.

Paul Doty, Hollenden Hotel, Cleveland, O.: Regret my inability to attend your meeting. Hope that it will be most successful.—IRVIN BUTTERWORTH.

A letter of regret from Mr. Gifford, of the East Boston Gas Company:

Your very kind invitation to attend the 29th annual meeting of the Western Gas Association at hand. I regret that duties here will prevent my attending, but wish you a most successful meeting.

We also have a letter of regret from Mr. Walton Clark, of the United Gas Improvement Company, of Philadelphia, who states that other business arrangements prevents his attending our meeting. He closes with the hope that this meeting of the Western will be as successful as Mr. Doty could wish.

A letter of regret from Mr. J. Oswell Jones, Superintendent of the Meter Department, Laclede Gas Light Company, St. Louis; one from Mr. H. C. Abell, of Muskegon, Mich., President of the Muskegon Traction and Lighting Company; a letter of regret from Mr. J. H. Cardall, of Memphis, Tenn.; also an invitation for the Western Gas Association to hold its next annual meeting in Memphis; a letter of regret from Mr. G. H. Rettew, of Greenville, S. C.; one from Mr. Alex. C. Humphreys. That from Mr. Humphreys is as follows:

My dear Mr. Dunbar: I am in receipt of a notice of the 29th annual meeting of the Western Gas Association, to be held May 16th to 18th. I am sorry to say that it will be impossible for me to attend. That is a particularly busy time at the Institute, because we are winding up for the year and getting ready for examinations. It happens that I am extremely busy at this office. I sincerely hope that you will have a thoroughly profitable and enjoyable meeting.

Mr. Lathrop sends his regrets from 40 Wall street, New York. Mr. T. R. Beal, Manager of the Poughkeepsie Light, Heat and Power Company, regrets his inability to attend, as also does Mr. Alten S. Miller, General Manager of the Consolidated Gas Company, of Baltimore. Mr. W. G. Africa, Treasurer and Superintendent of the Peoples Gas Light Company, of Manchester, N. H., sends his regrets. We have here a letter of regret from one who issued the first call for the meeting from which resulted the organization of the Western Gas Association:

LA FAYETTE, IND., May 12, 1906.

Mr. Paul Doty, President, Western Gas Association—Dear Sir: I very much appreciate your very kind personal invitation to be present at the Cleveland meeting. If nothing unforeseen happens will be present. In looking over the list of members I see but one or two who attended the first meeting at St. Louis. It is not of record, but I believe I am the only one left who signed the call for the St. Louis meeting to organize the Western Gas Association. I have always taken great pride in being a member. I hope to see the organization perpetuated as the Western Gas Association without alteration or amendment. I am, very respectfully yours, WILLIAM WALLACE.

I also received a letter from Mr. Thwing, who was our President one year ago, regretting very much his unexpected prevention from being present and wishing us a most profitable meeting. We have a telegram which I will read:

Mr. Paul Doty, President, Western Gas Association—Unavoidably detained. Regret exceedingly my inability to discuss Mr. Berkley's excellent paper. Most important subject. Trust something may be accomplished towards cementing the relationship between companies and their employees. Best wishes to fellow members.—G.W. CLABAUGH.

I am ready to receive the dues of such members as may be pleased to pay them at this meeting, and also have for sale Association badges.

The President—If there is no further business I will declare the morning session adjourned to meet sharply at 2 o'clock this afternoon. We have an important programme, and every moment of our time will be occupied fully. I beg of you to give me of your time as much as I shall give you of my time. The meeting stands adjourned till 2 o'clock.

A recess till 2 P.M. was taken, and the Association members were photographed,

FIRST DAY—AFTERNOON SESSION.

The Association reassembled at 2:08 P.M.

The President—The paper on the

REGULATION OF RATES

will be presented by Mr. George McLean, Dubuque, Ia. Mr. McLean, you have the floor.

Mr. President and Gentlemen: Undertaking now to give you, within 5 minutes, an abstract of my paper dealing with public regulation of rates, I will say the paper first shows, by citing cases decided by the United States Supreme Court, the power of public authority to control rates of public utility companies. Next, it shows the limitations of that power, as far as the same Court has defined them. The paper then proposes what I believe to be an equitable and practicable method of exercising that power.

A gas plant is a public utility so affected with a public interest that the right to regulate the charge for the service is one which should be reserved to the representatives of the public and whose exercise should be subject to review by the courts.

In the past this proposition, now commonly understood and accepted, was disputed. But we now have a body of law on the subject, the construction of which began 30 years ago, or in 1876, when what are known as the "Granger cases," relating to railroad rates, coming up from Iowa, and the Munn *vs.* Illinois case, were brought before the Supreme Court of the United States. The Munn *vs.* Illinois case involved the validity of a statute prescribing rates for elevating and warehousing which had been held constitutional by the Supreme Court of Illinois. The Supreme Court of the United States, in affirming this decision, not only asserted the right of the Legislature to regulate charges for all public utilities, but further implied that its abuse of this power could not be corrected by judicial authority, Chief Justice Waite saying:

"For protection against abuses by Legislatures the people must resort to the polls, not to the courts."

However, the same tribunal subsequently determined that the power to regulate rates is subject to the constitutional provision that private property should not be taken for public purposes without due compensation, and that, therefore, the rates prescribed by legislative authority must be reasonable, and that the courts have authority to determine whether a rate prescribed by public authority is reasonable, and to enjoin its enforcement by such authority if it is unreasonable.

In 1901, in the case of Cotting *vs.* Kansas City Stock Yards Company, the Supreme Court, Justice Brewer delivering the opinion, said:

"The State may prescribe and enforce reasonable charges. What shall be the test of reasonableness in those charges is absolutely undisclosed."

Back in 1897, however, in the case of Smith *vs.* Ames, in which a decree enjoining the enforcement of rates found to be unreasonable was affirmed, the court said, Justice Harlan delivering the opinion:

"We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And, in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount in market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for public convenience. On the other hand, what the public is entitled to demand is that no more may be exacted from it for the use of the public highway than the services rendered by it are reasonably worth."

So much for the law in the case. The court lays down a test of reasonableness which accords with justice and with sound commercial principles, and to which no objection can be offered on either side.

The question that remains is: How are the public service corporations to get what each is entitled to demand—equitable rates? How is each to be guaranteed protection against exploitation by the other? How is the one to be guarded against extortion, and how is the other to be shielded against public distrust of public service corporations and of their regulation by public bodies composed of politicians, a public distrust which is the source of most municipal ownership sentiment and the shield for all malicious attacks upon public service corporations?

When shall the rates of public service corporations be regulated and by whom?

These last questions have been variously answered in various States. In some, Iowa for example, rates are subject to regulation at any time by the city council, and this right to regulate at any time may not be contracted away. There are other States in which the city council may prescribe rates for the full period of the franchise, or at certain intervals, and still others in which the regulation is left in the hands of a State commission.

Many lighting corporations would unquestionably prefer rates not subject to alteration by public authority during the period of the contract or franchise. This would give them protection against everything except their own mistakes and competition. But no State which has enacted a statute reserving to public authority the right to regulate the rate at any time could be induced to repeal it, and if it should be repealed there would go with it the best argument against chartering a competing company, the argument that when the control of rates is vested in the public it is unnecessary to duplicate service in order to relieve the public of extortion.

Next in popularity with lighting companies, apparently, is the law giving public authority the right to prescribe rates at certain fixed intervals. The advantage from their point of view is that between intervals no sword of Damocles hangs over their heads. The disadvantage is the liability that the right to regulate will be exercised at the intervals prescribed in the contract. When it may be exercised at any time the liability to blackmail is constant, but the exercise of the right to regulate is rare. Moreover, there is one form of intimidation—the threat of competition—to which all are exposed and to which the liability is greatest on the part of those companies whose rates can be revised by public authority at certain periods only.

The desideratum is a system of regulation which, while assuring the public of a "square deal," will leave the corporation a motive for enterprise, progress and liberality, a motive for assuming risks in the effort to extend its business and increase its profits, and a guarantee that others will not be permitted to reap where it has sown.

Equitable rates can be established, the progress of the municipal ownership movement retarded, if not completely arrested, and the argument against competition involving duplication of service can be made conclusive to the public mind by establishing the principle of profit sharing in the regulation of rates.

This principle might be put into effect by establishing fair standard prices and making reductions from these prices dependent upon output or dividends.

England has a sliding scale, dependent upon earnings, and under which the so-called standard rate may be lowered or advanced. In our country a standard rate meeting the requirements of public sentiment would be a maximum rate. In some cities, under contract, sliding scales have been established under which rates decline from year to year, or from period to period, until a certain minimum is reached. This plan, while possessing certain advantages, is imperfect, since when the minimum rate is reached the liability to competition, especially from the municipality itself, is revived. On the other hand, when the rate is made dependent upon actual and not estimated total consumption, or upon dividends, the regulation as closely as possible becomes automatic.

Nothing in this world is perfect, and the dividend test is no exception; but, assuming fair basic terms, it is the one which, while absolutely satisfactory to the company seeking only a fair return on its investment and a fair reward for its enterprise, seems most likely to satisfy the public that it is getting a square deal and would be guilty of folly were it to authorize duplication of the service by the municipality or private enterprise.

Let us say that, a maximum charge having been prescribed, the standard rate of dividend is fixed at 7 per cent. on the actual value of the property, as tested by cost of reproducing the plant and cost of reproducing its business, or according to the test the United States Supreme Court has laid down in the case already cited. And I may say, in reference to the discussion that occurred this morning as to the proper basis for valuing a property, I think the gentlemen there did not emphasize the real point—that is, what are maintainable earnings? I think you will find a legal basis for valuation in the decision of the case of American Water Works Association *vs.* Denver, reported, as I remember, in the *Federal Reporter*. This basis for valuation is also a basis for rates. Then let it be provided that for every increase of 1 per cent., or ½ of 1 per cent., above the standard dividend a certain reduction in price shall be made to consumers. This would mean actual profit sharing. The enterprise would become a mutual concern and the public would be assured full participation in the profits resulting from the economies practiced under capable management of a gas property. Municipal ownership now has its advocates among those who admit that municipal waste equals corporate profits. They say they would rather the

profits were wasted in the employment of needless labor, or in liberal compensation to municipal employees, than reserved to capital, since the public pays the freight in either case. The argument is fallacious, because the public interest lies in rates and service; and municipal ownership, therefore, can be justified only by showing that it means improvement in rates or service, or both; but it is an argument the public service corporation could meet most effectively by taking the public into partnership in the manner already described.

In conclusion, it may be said that a prolific source of prejudice against public service corporations is the glittering prospectus of the promoter, in which the profits of the gas company whose securities are for sale are set forth in most alluring fashion. In these proclamations the prosperity of the concern is often exaggerated by representing its revenue over operating expenses, taxes and ordinary repairs as profits, when the fact is that, assuming all disbursements for items properly belonging to operating expenses are charged as such, and not to investments, the balance shows, not profit alone, but profit, plus depreciation, plus value of the insurance and the indemnity against all contingencies and hazards of the business, which cost or value has not been charged to operating expenses, as it properly might have been, the company having borne the risk.

Of course, proper deductions should be made for depreciation, reserve or contingent fund and various forms of insurance, even though the company carries its own insurance against many or all contingencies. When this prospectus or statement mentioned falls into the hands of a newspaper making a campaign for lower rates, a new company or a municipal plant, it is accepted as proof that the profits resulting from a certain volume of gas business at a certain rate are inordinate and that gas companies generally are practicing extortion upon the people. As a fraternity we should frown upon these exaggerated statements and by fair dealing with the public endeavor to establish relations of comity between the public service corporations and the people.

Discussion.

The President—You have heard the presentation of Mr. McLean's paper. It is open for discussion. Mr. Greenough?

Mr. Greenough—Mr. President, there is a great deal can be said on that paper. It is a very interesting subject of discussion. There are, as you gentlemen all know, practically only three ways of meeting the question. One is by the normal method practiced throughout the West, of having the rates regulated by the city council periodically. A second is by a commission, such as has been done for so many years in Massachusetts, and is now at this late date being adopted in New York, and a third the scheme of profit sharing or of sliding scale dividends, which is suggested by Mr. McLean, and is such as they have been talking about in Massachusetts, and on which they have just presented a very comprehensive report. Now, the real question about these matters is how they can work? What is the result? I think it was Captain Bunsby, in Dombey & Son, who said that the moral of a thing lies in the application of it, and that is exactly the case here. How do these different methods of treating the corporations work when they are put into practice? Take the system which is prevalent throughout the West, where periodically the city council, acting through their Mayor, and the gas company make a trade as to the price. That price lasts in Ohio for 10 years, if not disturbed sooner, and I presume in other parts of the country according to contract. As a rule that works very well. It is only when you come across what is commonly known as a corporation buster, like the present Mayor of this city, that you find it practically impossible to do business. Fortunately the contract which we had with the city was made before he came into office, but his unwillingness to make any contract with a street railway except on a 3-cent fare basis, which the city railways say they cannot do, and his attempt to impose taxes on the corporations, makes it, of course, very dubious what may happen to this company when the time comes for a renewal of this contract. He has to give us a living price by law. But as a rule the trades have been fair trades. I must say that coming here as I did 13 years ago—14 years ago—from Boston, where we had been in hot water perpetually with one proposition for competition after another and trouble on every hand, to come out here on a 10 years' contract with the city, share profits with them by giving them 6½ per cent. of our gross receipts, making them a lower price than they had ever seen or thought of, gave us peace and rest which I never had experienced before since I had taken up the business of gas making. It seemed to be a perfectly satisfactory trade. There was no possible thought of competition. They were perfectly willing apparently that we should make what we could out of gas at 75 cents. When it came to a renewal of the contract there was no difficulty. We took 5 cents off, got 1-candle power gain, and again made a perfectly satisfactory contract. As far as I have seen the contracts that have been made through the West here I think the prices have been pretty fair. What this municipal fad is going to amount to I don't know. There are some people, very respectable people, in this town, who say that anything except municipal ownership is immoral. Now, no profit sharing scheme is going to have any effect upon those people whatever. They think the city must own the public service corporations, and it is not any use doing anything to prevent municipal ownership with that sort of person. Now, what has happened? Look at the operation of the Gas Commission in Massachusetts. Everybody who knows that knows that one of the principal objects in dealing with public service corporations is attained, and that is entire publicity. With the exception of that extraordinary mess in Boston, which was started before the establishment of the Gas Commission and could not be stopped, had run its course, there has been no competition in Massachusetts in the last 20 years, and there is not a well managed gas company whose property is not much more valuable than it was 20 years ago, and they are selling gas at a great deal less money. There is no question, that scheme has worked, and would have worked in a great many other States in the country to the advantage of those States and of the gas companies there, if it had been established shortly after the Massachusetts Commission. That has been a success, and I have no question that the New York Commission will serve its purpose to a very considerable extent, and will prevent that stock watering which has been prevalent in so many parts of the country. Now, take this question of profit sharing, of sliding scale, as it has been run in England. In the first place, those English companies, starting as they did so long ago, when the rates for money were much higher, had got the government into a position where they were practically called on to guarantee them 10 per cent. The history of that legislation as given in this Massachusetts report is very interesting. But the companies finally agreed that they would reduce the price if they might increase their dividends, and some of those companies got up, as you know, to nearly 14 per cent. In fact, if I am not mistaken, the South Metropolitan doubled its capitalization, so that it might reduce its apparent dividend. At the present time rates are being made which are much more in accordance with the modern practice of cheap money. But those companies have not been popular. You could not pretend that the people of London have been satisfied with the service which they have got. The well managed companies have sold their gas cheaply there; the poorly managed companies have sold their gas at a very much higher price. It has not had the effect of reducing the price to them. The two companies on each side of the river, selling gas at different prices, stir up a good deal of feeling amongst the public. When they propose to put that into operation in Boston what has been the result? I presume that you, gentlemen, are all fairly familiar with the Boston situation; how, after being exploited by one patriot after another, it finally got to a point where a number of Boston men went in and bought control of the situation, and then asked permission of the Legislature to consolidate the companies and do a legitimate business. It turned out that they had had to pay a good deal more for the property than the property was actually worth, and property which had cost them about $24,000,000 was actually capitalized at $15,000,000, and they were allowed to pay 8 per cent. on it, and they were also to be allowed to charge 95 cents and then to charge 90 cents. These gentlemen who have been abroad propose that, instead of being allowed a price which would pay them an 8 per cent dividend, they shall be content with a price which will pay them only a 7 per cent. dividend, and then they shall be obliged to scratch around and see if they can further reduce their price in order that that they may get back to the 8 per cent. dividend, which they were practically guaranteed by the Legislature last year after a careful investigation. It doesn't seem to me that is a fair proposal. The Municipal Association of Boston, or whatever the name is, I have forgotten at this minute—it corresponds a good deal to our Chamber of Commerce here—have appeared again on the scene and have objected to these gentlemen being given the price which they had accepted. The people in management in Boston are a very liberal set of men. The The present President, I think, appreciates as much as any man that I know the advantage to the gas company of having good wishes from the public on his side, and instead of waiting till the time which they might have for the reductiou of the price of gas they reduced it promptly to 90 cents per 1,000 feet. Now they are asked to come into this profit sharing business and put the price of gas at 85 cents and see what they can do then. That is not a fair trade. The immediate application of the profit sharing principle to this country certainly is not one to prepossess people in favor of it. Those gentlemen are entitled to a fair price and to a fair charge to develop what business they have got. And

then these advocates in Boston of the sliding scale say they think it should only run 10 years. If it is only going to run 10 years, what is the use of doing it at all? They propose to give them a price for 10 years; see what they can do with it. If they are going to overhaul them again at the end of 10 years, there is very little encouragement to do more than they would do without it. I am like half the Commission who went abroad and investigated the sliding scale in England. I fail to see that there is any advantage in its application to this country over the method which is in operation in Massachusetts at the present time, and which I think is by far the best scheme that has yet prevailed in this country.

The President—Mr. Knight, can you tell us what Michigan is doing on the question of rates?

Mr. Knight—Mr. President and Gentlemen, I don't know that I can give you any information about any part of Michigan except Kalamazoo. We have a franchise at Kalamazoo which gives us the privilege for 10 years longer to sell gas at about $1 per 1,000. I am about to undertake to get an extension of that franchise, and expect to pay to the city some fixed sum per annum, including the 10 years unexpired term. I don't know what the amount will be, but I have an idea that such an adjustment is proper.

The President—In the nature of a franchise tax?

Mr. Knight—Yes, sir.

The President—Mr. Forstall.

Mr. A. E. Forstall—I am not prepared.

The President—Mr. Gardiner, do you want to speak for Boston?

Mr. Gardiner—Mr. President, I don't think that just at the present moment I care to say anything. I would, however, like to ask Mr. Greenough if his objection to the London sliding scale is more particularly as to its specific form of application to Boston, or to the principles of the sliding scale.

Mr. M. S. Greenough—The moral of the thing lies in its application. As proposed in Boston I don't think it is a fair proposition, and that is the only application of it and the only suggestion of its application in this country that has been made here. I think that if in Boston they are going to start on the sliding scale they ought to give them a price of 90 cents, and let them go ahead and see what they can do with it. They are always under the control of the Legislature. I think they propose to give them only 85 cents, cutting them down right away, a year after they got started, and they only give them 10 years to develop. Is that a fair proposal? I think the other scheme that we have had in this country works pretty well. Don't you agree with me that Boston is getting rather harsh treatment?

The President—Is there any further discussion? If not, I will ask Mr. McLean to answer the arguments that have been presented and close the discussion.

Mr. McLean—Mr. President, I have but a few words to say by way of comment on the discussion. On page 110 in the paper it will be seen how I have approached this whole subject. You see in one line there it says "assuming fair basic terms." If anybody responsible for the conduct of a public utility finds himself in a situation which requires him to consider a matter like the sliding scale, his first attention, of course, will be given to the basic terms, the justice or the injustice of the policy, as respects his company and the public, is all dependent upon securing such terms. Under the laws of this country it is not within the power of any State, nor of any government, to compel a company to begin with rates which are not, at the time of the beginning of the agreement, compensatory. If public authority were to undertake to-day to fix the rates of any company in Boston or elsewhere, the basis for such rates must necessarily be the fair value of the property put at the public service. The rates must be such as will give a fair return on such a value. If they fall short of that, the legislation is confiscatory, *ultra vires*, and void. So that, in beginning such a policy, it will never be necessary for any company to accept at the outset any rate which will not yield proper returns upon the fair value of the property then placed at the public service. I presume that one would desire or require also, as a preliminary to such legislation, general legislation on the subject, providing that any companies placed under the operation of such a scale would, as long as they were under such operation, be protected in the field; that is to say, they would have practically an exclusive franchise for the field in which they are operating. I think the placing of companies under the sliding scale assumes this. Now, then, regulation and protection, as President Roosevelt has said, go together, and if the State undertakes to exercise such a paternal care over the companies, it must give them some protection along with control. But let us assume that the period would be only a tentative 10-year period, such as has been proposed by the committee in Massachusetts, and we will say that, through skillful management of the business, the value of the property had increased during that period. Let us suppose that, at the expiration of this tentative 10 year period, the operation of this law terminated and a public body undertook anew to fix the rates. Then the value of that property for the purpose of rate fixing, or for any other purpose, would be the earning power capitalized. That would be then the fair value of the property placed at the public service, and the new rates that were established would have to be such as would yield a fair return on that value. I think that is all, Mr. President.

The President—I have pleasure in extending the thanks of the Association to Mr. McLean for his paper.

(To be Continued.)

[Official Report—Continued from Page 1069.]

TWENTY-SECOND ANNUAL MEETING, OHIO GAS LIGHT ASSOCIATION.

Held in Cincinnati, O., March 21, 22 and 23, 1906.

Third Day—Morning Session.

Discussion on the Paper by Mr. R. G. Congdon.

The President—Gentlemen, the paper is ready for discussion.

Mr. Shattuck—Mr. President, I have tried coating with cement and we found that if we could get this cement to adhere to the pipe thoroughly it seemed to be a pretty good protector; but in long stretches there is bound to be places where the moisture will gather between the pipe and the cement, and that will flake off and allow the electrolytic action to take place. We dug up a piece of ground in front of the power house, about 1,000 feet long, to lay a 4-inch pipe in. We built a trough and practically buried the pipe in cement, 2 inches thick. We found that the electrolytic action stopped there, but it began farther back. It simply forced the current farther back.

Mr. Gardiner—Mr. President, in connection with coating a pipe with cement, I have known of pipes being coated and a steel wire wound spirally around the pipe and imbedded in the cement, forming concrete steel construction which bonded the cement thoroughly to the pipe and prevented its breaking away.

The President—Can anybody give information as to efforts which gas companies have made to prevent street railway companies from making the earth uninhabitable for iron pipes? It seems to me that all of these elaborate and expensive precautions bring about the most unsatisfactory results. We are like a man trying to protect his property from incendiaries. It is very hard to do. Can you inform us, Mr. Butterworth, as to any progress that has been made by the institution of any lawsuits on this subject?

Mr. Butterworth—This suit in Dayton that was spoken about in one of the papers at this meeting is the only suit on that subject that I know anything about. I do not think the Gas Company had anything to do with that suit directly.

Mr. Jones—It was the water company.

Mr. Butterworth—I agree with the President that the gas companies have done very little in a concerted, organized and effective way, to place the responsibility in this matter where it belongs.

The President—Cincinnati is the only place I know of that has really protected its pipes, and it is done here by a double trolley. That looks to me like the only feasible plan.

Mr. Congdon—I have a few pieces of pipe which I brought along with me as samples of pipe taken out of the ground, for the purpose of showing the state of preservation of the metal. There is a little card on each pipe showing when it was laid, when it was removed and the conditions and circumstances under which it was used. If any of you care to look at them, you will find them on the Secretary's table, and the tickets on them will furnish a brief history as to each piece of pipe. This pipe which I now hold in my hand shows a case of electrolysis where the company laid its service pipe up to the inside of the curb line in advance of the permanent paving that was put down. We had to remove the pipe in a short time on account of the electrolytic action, and you can see the effect of it here (indicating).

The President—I do not know whether any of you have had any experience with a sample of pipe just like that or not (indicating). I have seen a street railroad manager deny the fact that the street railway current had anything to do with putting that pipe in that condition, and defy me to prove it.

Mr. Congeon—In this pipe here (indicating) that is not a case of elec-

trolysis. I investigated that pretty carefully. In Atlanta, Ga., there are very few houses that have cellars to them and where the pipe comes up out of the ground and goes through the lower floor if there are any ashes or cinders swept up against it, it will rust out there. This sample of pipe shows the action of rust where the pipe came in contact with ashes and cinders.

On motion, a vote of thanks was then extended to Mr. Congdon for the very excellent paper prepared and submitted to the Association.

The President—I will now call on Mr. Doty for his report on

THE QUESTION BOX.

Mr. Doty—This is the report on the Question Box of the Ohio Gas Light Association as presented to the 22d annual convention, held at Cincinnati, O. I will read Mr. Doherty's introduction:

Introduction.—The support given to the Question Box work this year has been very encouraging. No extreme attempt was made to maintain interest, which has been done in previous years. A large number of people are interested, willing, and in fact anxious to help. This has been an evolution which was expected, and in fact nearly all of the editor's expectations have been realized.

The previous editions have necessarily covered, among other subjects, many which were of an elementary nature. The progress of the work is well shown by the more advanced character of many of the questions discussed in this edition. The continuation of the plan would tend to automatically raise the standard of the work.

The Question Box work is, in a way, the printed statement of the best opinions of many practical men. Its value could be further enhanced by more liberal contributions.

Through necessity, and the natural requirements of the profession, the members of the gas fraternity are widely separated. In many other lines of work, weekly or monthly meetings may be held for mutual benefit or advancement. Owing to the great distance separating the various operators, and inability of many members of the profession to attend our conventions, the opportunity of frequent meeting is only assured to a relatively small number of the profession.

The former critics of the Question Box (and it is proper to speak of them in the past tense) probably did not appreciate the fact that the Question Box was intended to help all members who do not enjoy the opportunity of attending many conventions each year and the bulk of whom never have an opportunity to attend any convention. Judged from the viewpoint of the man who has been given a technical education, has had wide experience in the gas business and enjoys frequent contact with other gas men, the value of the Question Box must necessarily be smaller than to the great mass of operators who are practically unknown generally to the balance of the profession.

In the days gone by it was the swagger thing to criticise the Question Box work, a favorite story of a well known gas manager might have been told and would have seemed apropos. This man had a little niece of whom he was very fond, and he took her to church one Sunday morning. The minister announced the hymn and then as was customary, read the verses. In a loud "stage whisper" the little girl said: "What is he reading for, Uncle? I know it." She had forgotton there were other members of the congregation besides herself and that possibly some of the others were not so fortunate as to know the words of the hymn.

A few extracts from letters received, may interest you:

(a) "An immense amount of 'boiled down' information which will be of great service to anyone interested in the gas business."

(b) "I cannot speak too strongly in favor of the good work your department is doing."

(c) "Am very much in favor of this method of gathering and disseminating knowledge of our business."

(d) "Am astonished at its cyclopedic character. It is a wonderful piece of work, and it appears as though it ought to be of a great deal of value to the average gas man."

(e) "Equal to a reference library of gas literature, giving the opinions and practice of so large a number of gas engineers throughout the country. The indexing makes it very easy to find the questions."

(f) "Consider it the most valuable book I have in my collection of gas literature."

(g) "Anyone in the gas business can appreciate the value of the work."

(h) "You have certainly succeeded in collecting a lot of very valuable information and I congratulate you on the success you have made of this branch of gas association work."

(i) "The work offers many practical suggestions, and is of interest and value to the scientific man as well as to the practical worker in the manufacture of gas and the management of gas plants."

(j) "Will prize it above all of my other books on the subject of gas, for it is a record of opinions and experience of men who stand high in the profession, giving information that is of incalculable value to the student."

(k) "Am very much surprised at the magnitude of the undertaking and wish to congratulate you upon the successful carrying out of same. Our president to-day says of all the books he has upon the gas question he considers this of the most value from a practical standpoint."

(l) "In no other manner would it be possible to gather and place before your members and their friends such information as your book contains."

Not only are the answers valuable, but the gentlemen who contributed them, as well as those who asked the questions, must have been benefited by working up such questions and answers.

It has been necessary to reduce the expense of the work this year, but as the spirit of co-operation has been established, the efficiency of the work has not been lessened. The assistance obtained from others has been extremely generous and very gratifying. The Editor and his assistants have been already well paid for their trouble by the evidence of support and co-operation on all sides. It is almost impossible to believe that in so short a time such a change of sentiment could be wrought in the reception of the Editor's requests for assistance.

The mailing list this year has been materially reduced. No strenuous efforts have been made to arouse inactive fraternity members or cultivate new ones. In spite of this fact, there are 571 questions, to which there are 3,620 answers, contributed by 458 men. The members of the English gas fraternity have contributed valuable data, and answers from other countries across the water have also been received. These contributions have been especially appreciated. The tendency in the answers has been towards a more thorough discussion of a few subjects, rather than a general discussion of many.

The Editor has inaugurated Association work of different character, merely as a means of starting the work. This particular work seemed to require extraordinary effort to put it on a plane where its continuation would be insured. It now has so many warm supporters that its success seems assured.

The Question Box work this year has been carried on in Denver as heretofore, in spite of the fact that the Editor's office is 2,000 miles away, and the Editor acknowledges with great pleasure, the excellent work done by Mr. George Steinwedell as the active man in charge of the work. The Editor also acknowledges the valuable assistance of Mr. Frank W. Frueauff, Mr. R. G. Griswold, and Miss Edythe Baillie, of the Denver Gas and Electric Company, and Mr. J. Charles Andrews, of New York city.

With the completion of this publication, your Editor will be compelled to sever his connection with this work, and in doing so, wishes to thank all contributors for their support and interest. Without this liberal support, the work would have been impossible.

Respectfully submitted, HENRY L. DOHERTY.

The table of contents will show that there are 18 headings or subjects indexed and treated of in this Question Box: 1. Gas making material, 9 questions. 2. Manufacturing equipment, 52 questions. 3. Manufacturing operation, 60 questions. 4. Residuals, 29 questions 5. Manufacturing chemistry and physics, 72 questions. 6. Storage, 8 questions. 7. Distribution supplies and material, 65 questions. 8. Distribution operation, 32 questions. 9. Chemistry and physics (other than manufacturing), 29 questions. 10. Gas engines, 39 questions. 11. Gas burning appliances, 80 questions. 12. New business methods, 43 questions. 13. Collections and dealings with consumers, 12 questions. 14. Accounting (other than collections), 17 questions. 15. Management, 17 questions. 16. Legal matters, 2 questions. 17. Literature, 2 questions. 18. Miscellaneous, 5 questions.

In making an analysis of the Question Box along these lines, to find where the center of interest lay, it was really surprising the variety of subjects covered and the variety of questions asked and answered. Gas burning appliances, other than engines, this year has the maximum number of questions—80—showing that the interest lies in gas burning appliances and would justify the effort that is now being made or the requirement that is being demanded for gas appliance engineers. We are specializing business in all branches and there is important consideration now being given to gas appliance engineers. They are very closely related to the new business departments and the commercial de-

partments of the company, and evidently there is a need for them. The next most important subject is manufacturing chemistry and physics—72 questions—which shows the importance of a knowledge of chemistry and physics in connection with the gas industry, and so on with the other items. Last year I considered the Question Box as a machine to determine the efficiency; that is, the proportion of the number of answered questions to the number of questions asked. This year, analyzing the Question Box in the same way, taking into consideration the number of questions asked—571—and the number of questions answered—549—I find that the Question Box as a machine shows an efficiency of 96.15 per cent. There are 22 questions still unanswered. That would make a very respectable Question Box list in the way the Question Box was formerly handled. There is a fair representative attendance here this morning. If it were desired to demonstrate the relation between the efficiency of the Question Box in this form and the Question Box in the old form, I could read these 22 unanswered questions, thus ascertaining how many of the unanswered questions may be answered orally from the floor of the convention. May I take that much time, Mr. President?

The President—Yes; and if I find that time is getting scarce, I will call you down.

Mr. Doty—I would like to make the Question Box 100 per cent. efficiency. We already have an efficiency of 96 per cent., and there is only 4 more per cent. of efficiency to secure. The first question unanswered is found on page 13 of the Question Box and is Question No. 57:

"What is the formula for ratio of water to condenser surface in water gas condensers?"

This question formerly would have been assigned to someone on the floor who was known to be well qualified to answer such a question, and if I may assume the liberty, this question is now assigned for answer from the floor. "What is the formula for ratio of water to condenser surface in water gas condensers?" It is not an unusual question.

The President—I notice that everybody is not speaking at once, Mr. Doty.

Mr. Doty—Is anyone prepared to give that question an answer. Remember if you do not answer you are destroying the efficiency of the old style Question Box. Mr. Butterworth?

Mr. Butterworth—Sir? (Great laughter.)

Mr. Doty—Can you answer the question; will you answer the question."

Mr. Butterworth—I can but I won't. (Renewed laughter.)

Mr. Doty—Why not?

Mr. Butterworth—Because I am interested in preserving the efficiency of this new method of the Question Box, and therefore, I don't like to answer it for fear that it might increase the efficiency of the old method. (Prolonged laughter.)

Mr. Doty—But you want to be fair to the old system. The next question which is unanswered is found on page 16 of the Question Box and is Question No. 61:

"What is the relative cost of the transmission machinery for compressed gas and for electricity?"

That is a fair question. There are transmission engigeers here who ought to be able to answer that question. I presume these questions were asked in good faith; otherwise they would not have been embodied in the Question Box. Is there no answer? The next question unanswered is found on page 45 and is question No. 91:

"What efficiencies are being obtained in America in the firing of benches with separate soft coal producers?"

Is there an answer? The next question is found on page 46 and is Question No. 92:

"What is the highest thermal efficiency obtained in crude oil water gas apparatus?"

We had a paper on producer gas apparatus showing the thermal efficiency, and now someone wants the thermal efficiency obtained in crude oil water gas apparatus.

Mr. Thwing—Mr. President, I think the reason these questions are not answered is because they are vague and indefinite. Take, for instance, this last question:

"What is a crude oil water gas apparatus?"

I do not know what it is.

Mr. Doty—I imagine, Mr. Thwing, it is an apparatus in which crude oil is used for the manufacture of gas, as applied, for instance, in Texas and California. That is practically a crude oil water gas apparatus, because the steam is decomposed from the carbon obtained from the oil. It is not a coke process, such as the Lowe or Wilkinson process and others.

Mr. Thwing—That is only a guess, however.

Mr. Doty—That is the Texas oil process, or the California oil process, where no coke is used; that is, no coke from coal is used. The coke from the oil is used in manufacturing water gas.

Mr. Thwing—I understand that there is a process of that kind, but is that what is meant by this question?

Mr. Doty—I should think so. In some sections of Texas and California they are using the crude oil process entirely. Can you give an answer to the question as to the thermal efficiency obtained in crude oil water gas apparatus?

Mr. Thwing—No, I could not; I do not know anything about it.

The President—They first heat up with oil and not steam and then they make water gas with steam and oil. It is nothing but the Chamber Checker Brake process and where oil is cheap it is a pretty good process. I have seen them in use.

Mr. Doty—Is there an answer to the question? The next question is found on page 48 and is question No. 96:

"How is the capacity of a washer figured?"

Mr. Carpenter will you answer that question?

Mr. Carpenter—What kind of a washer? I do not know what the question means.

Mr. Doty—How could the question be made more plain? Do you mean that the question is indefinite because it does not specify whether it is a coal gas washer or a water gas washer; is that what you mean?

Mr. Carpenter—Yes.

Mr. Doty—Then we will divide the question and ask how is the capacity of a coal gas washer figured?

Mr. Carpenter—I have no figures here.

Mr. Doty—Then how is the capacity of a water gas washer figured?

Mr. Carpenter—I have no figures here from which I could answer the question accurately.

Mr. Doty—Mr. Chollar, you have designed a washer. How is the capacity of a washer figured either for coal gas or water gas?

Mr. Chollar—I do not know. I never attempted to figure the capacity at all.

Mr. Doty—You have designed washers for coal gas?

Mr. Chollar—With the washers that I have designed the capacity was measured, so far as it was determined, by the size of the connections.

Mr. Doty—Is there any relation between the quantity of water used and the quantity of water passed?

Mr. Chollar—Of course, when you use a large amount of gas it would pass more water in proportion.

The President—I do not think the Professor has been fair in his test questions.

Mr. Doty—I do not want to take too much of the time of the Association. I have now taken 5 questions, 4 of which have been unanswered and 1 of which has been partially answered. So that we may say that the open method of Question Box work would probably show an efficiency of 20 per cent. It can be made much more efficient than that, I know, but it would take practically 21 answers out of 22 questions, leaving only 1 question unanswered, to get the efficiency of the written Question Box method of 90 per cent. That I think demonstrates very clearly the fairness and the far-sightedness of Mr. Doherty in insisting upon this foam of handling the Question Box, and certainly the amount of information that is given in this Question Box is most valuable. Furthermore the plan now pursued of revision by the Board of Revision of the Question Box, permits the quality of the work to be improved. The list of contributors contains names of men who carry with them the weight of authority. For instance, there are professors of universities and colleges whose names are recorded in this list of contributors. In addition to that it affords an opportunity to everyone who has information to furnish it for the benefit of the Association. I am quite positive that in no other way could this mass of information be obtained at so small a cost. The cost for the efficiency is relatively low, and the information or educational efficiency—if I may use the term—is relatively high. I think the Question Box has demonstrated its right to exist in its present form. Gentlemen, this is my report on Question Box. The Chair suggested yesterday that if there were those who wished to ask further information as to any of the questions propounded, we would be glad to consider them as far as we possibly can.

There are a number of questions in the book that require some explanation. For example, question No. 177, on page 72:

"What is considered good results on oil in water gas machines expressed in candles per gallon?"

There are answers by American engineers, Messrs. Pickens, Shattuck and Morton, and then Mr. Botley answers the question and his reply has reference to the English practice. He says, "My experience and inquiries lead me to the conclusion that 6½ candles per gallon is a good average result, 7 candles per gallon is distinctly good, and 7½ candles per gallon exceptionally good." He is basing his answers entirely on the English gallon rather than the American gallon of 231 cubic inches. His gallon is very much larger—277 cubic inches. There are chances for difference in answers like that. Now take question No. 210, on page 87:

"In an iron oxide set, should the fresh box come first or last? Why?"

There is a difference of opinion in the answers to that question and one gentleman says that he cannot see how it would benefit the gas by having it pass through a foul box. Of course, it would be no benefit to the gas, but it would be of considerable benefit to the oxide. A careful study of these questions and the answers will be repaid by the information gained. As reflecting on the state of the art, it seems to me it has a right to be considered as up-to date. For example, in the matter of tne recommendation of incandescent mantles, page 336, question No. 835:

"Do you recommend the use of gas mantles?"

Look at the unanimity of the answers, "Yes." It was not so many years ago when it was quite a popular thing to discuss the gas mantle question and the gas men were not inclined to recommend the use of gas mantles. They were afraid it would destroy the business and did not want to push the new mantle business. Now there can be no question as to the position of gas men on this subject. The same is true relatively with the electric man. A new type of lamp comes out showing a higher efficiency in watts per candle and immediately the question was raised as to whether it would affect the imdustry adversely. I remember in Denver, Col., at convention of the N. E. L. A., a new lamp was exhibited showing 10 or 15 per cent. increased efficiency in the consumption of current, and immediately the fear was expressed that the lamp might work injury to the business. As a matter of fact the improved Welsbach mantle possibly cuts down gas consumption 50 per cent. or better, and yet we went right ahead co-operating with the mantle industry and used the mantles. This answer to question No. 835, 10 years ago, would have been impossible. So as I say, the Question Box reflects the spirit of the times.

The President—Are there any questions that anyone would like to ask on the work of the Question Box? There is to be a report on the work of the Board of Revision of the Question Box, which I think is next in order.

Mr. Gardiner—Mr. President, if I may be excused for digressing a little, I would like to say that we make use of the Question Box in a way which I think will be of interest. I bring this up now, because I will have to leave in a few moments to catch my train. We have a monthly meeting, evening session, of the district representatives of the Boston Consolidated Gas Company. We have 40 men who are on the street all the time, going from house to house, inquiring as to the efficiency of the service and the satisfaction of customers, and having raised a service as now installed to as high an efficiency as possible, and satisfied all proper or ill-founded complaints, they seek to sell apparatus and otherwise stimulate the sale of gas. These representatives meet with Mr. Writington, who is at the head of the department, once a month—the first Thursday of every month—and we will be very glad indeed if any gas men are ever in Boston at that time, if they would attend these meetings. They would certainly be welcome. At these meetings we have had a number of papers by different representatives on different phases of their work, and we have used the Ohio Question Box to a very great advantage indeed. We find it a most valuable reference book for the gas manager in developing the efficiency of the commercial man and the district representative. We select questions from it and read and discuss the answers by the different men and elaborate thereon. We find it is a remarkably valuable assistant in that kind of work, to develop the efficiency and knowledge of the commercial district representative.

The President—Gentlemen, I am very glad indeed that Mr. Doherty has handled this Question Box in this way. For my part I had some doubts as to whether this was the best way to handle the Question Box department, but these doubts have been absolutely removed. You can get answers from men at their desks that you cannot get on the floor of a convention. Mr. Doty brought up one matter which reminds me of something that I desired to bring before this Association. To the Englishman a gallon means 277 cubic inches. To us it means only 231 cubic inches. There is pending in the Congress of the United States a bill to adopt the metric system for America. A great many trade associations have passed resolutions, some favoring it and some condemning it. I think it would be something of a guide to our representatives in Congress if this Association were to pass resolutions approving the metric system. A man can get an education in the metrie system while he is learning his arithmetic in gallons and cubic inches, and if this Association thinks proper, I believe a resolution at this meeting, indorsing the metric system, would be a good one.

Mr. Butterworth—I would like to suggest that this might be a profitable question to refer to the prospective American Gas Institute if it shall be formed.

The President—The next order of business is the Report of the Question Box Revision Board, Dr. H. B. Harrop, Chairman.

Dr. H. B. Harrop, as Chairman, then submitted and read the following

REPORT OF THE BOARD OF REVISION OF THE QUESTION BOX:

This is to be merely a progress report. The voluminous report of last year set forth the success attained in organizing the Board and the work accomplished up to that time. I shall here repeat certain parts of that paper and touch on the progress made since then, to bring it down to date.

This work was inaugurated at the 1904 convention of the Ohio Gas Light Association at Cleveland, when it was proposed to organize a committee to revise the Question Box, consisting at that time of 2 volumes, and combine with the condensed and revised matter sufficient outside matter to frame up the beginnings of a gas compendium, or what we hope and now believe will grow in the course of years, with the general co-operation of the gas fraternity, into an encyclopedia of the gas industry. During the year between March, 1904, and March, 1905, a board of 18 members was organized and the task of laying out the forms and methods of procedure was completed. The work of interesting all the associations and certain practical and scientific authorities was undertaken with a good measure of success, and the revision of the 1st and 2d issues of the Question Box was finished in manuscript and partly put into type in time for the ensuing convention, but the lack of financial backing made publication impossible.

At that convention (Pittsburgh, March, 1905) the Association left the matter of publication in the hands of the Executive Committee, and the Committee took no action owing to lack of adequate funds; the Association has been carrying on a variety of extension work (more extensive indeed than any other gas association has ever shouldered) and the treasury has been kept at low water mark even though Mr. Doherty personally stood the major part of the expense of the Question Box proper.

The Association paid the current revision expenses during the first year, up to March, 1905, amounting to $265.58. The printer's bill for the part of the revision put into type, $48.60, was paid by Mr. Doherty. The current expenses of the chairman's office incidental to supervision of the work of the Board during the year from that time to date, approximately $180, I have paid myself.

The work up to the 190 5 meeting was rushed in expectation of publishing in time for that meeting. Since then the work has proceeded in a much more liesurely manner, making excellent progress in some departments, but never with any hopeful expectation of publishing for the present meeting. The manuscript volume which was ready for publication at last year's convention has ceased to exist; Mr. Doherty offered last May to stand the expense of printing that matter, but I took the responsibility of withholding it from publication as it was dwarfed by the immense 1905 issue of the Question Box, which had then been in circulation for some time. The procedure during the past year has been to merge the original revision volume, with the matter newly condensed from the 1905 Question Box, and the new volume, so far as it is completed, is a great deal more valuable than the old. As this report is written prior to the appearance of the 1906 Question Box, it can only be forecasted (but with very good confidence) that that volume will be another mine of information to draw from.

At this writing there is a strong probability that the Ohio will merge with the American, and, almost as certainly that the Western will also join in founding the American Gas Institute—or whatever the new National body is to be called. I feel that the success of this merger

should take precedence over everything else, and while I believe that the Ohio has been carrying forward several pieces of work that should not be allowed to die, I think that if the Institute can take over the responsibility of this revision and complete it, it will make a broader and better treatise out of it.

We need the moral support and the active co-operation of the most capable gas men in the country without regard to location or affiliation. It must also be undersood that the undertaking has grown to proportions beyond anything we contemplated 2 years ago, and that the work cannot go on unless its final completion in printed form is assured by an adequate financial guarantee. I believe that it is too much to ask of this Association to stand the expense of publication, but since this work originated in, and is a part of, the Ohio Association it seems to me that, if the members believe in it, the Ohio should turn it over to the Institute accompanied by an indorsement that means business, and with a guarantee fund that will serve as a substantial basis for the expense of publication. The moment we feel assured that the work is going to be given the right kind of moral support and active assistance, I stand ready to contribute $100 to such a fund and am sure there are a number of men in this Association of the same mind.

I wish particularly to call attention to the progress made by certain sub-committees of the Board whose work was presaged in last year's report. The farthest advanced of these is the sub-committee on Select Test Methods, under the able chairmanship of Mr. W. B. Tuttle. Large bodies move slowly, but when they once gather headway something usually happens. I had considerable trouble in convincing Mr. Tuttle that he was the ideal man for this position, but when once he had taken hold he went to the length of getting into personal touch by mail with every gas company in the country. Further, he has himself borne the expense of his campaign. He has made a written report to me, which I will ask him to present to this Association, showing what he has accomplished and what lies ahead.

It is regrettable that the sub-committee on Coal Mapping, which was to carry on an investigation into the location, extent and character of all the American coals suitable for gas making, together with analyses of same and specifications for identifying any coal, has nothing to report owing to our inability to find a man who knew enough about the American coals and at the same time had the leisure to take up the investigation. We have had some success in interesting Federal and State geologists and some other authorities outside the gas industry, however, and hope for success later.

The sub-committee on Indexing has made some notable progress but has not been fully organized, due to the fact that the man whom I expected to head this sub-committee, and whom I still hope will accept the responsibility, has not felt able, up to the present, to devote the necessary time to it.

The members of the Board having been appointed and reported at the last convention are as follows:

J. D. Shattuck, Manager Suburban Gas Co., Chester, Pa.

Henry I. Lea, Producer Engineer, Westinghouse Machine Co., East Pittsburgh.

Dr. F. Schniewind, General Manager United Coke and Gas Co., New York City.

Chas. R. Faben, Jr., General Manager Toledo (O.) Gas Light and Coke Co.

J. T. Mason, Superintendent Third Ward Works, Milwaukee (Wis.) Gas Light Co.

Fred Bredel, Gas Engineer, The Fred Bredel Co., Milwaukee, Wis.

S. Tully Wilson, Fuel Appliance Engineer, Denver (Col.) G. and E. Co.

A. B. Slater, Consulting Engineer, New York City.

Dr. H. B. Harrop, Chief Chemist Milwaukee (Wis.) Gas Light Co.

F. W. Stone, Manager Ashtabula (O.) Gas Co.

Clarence S. Lomax. Superintendent, Sharon Coke Co., South Sharon, Pa.

Byron E. Chollar, Engineer, Kansas City, Mo.

Henry L. Doherty, Engineer, American Light and Traction Co., New York city.

W. E. Steinwedell, Secretary, Gas Machinery Co., Cleveland, O.

Irvin Butterworth, General Manager, Grand Rapids (Mich.) Gas Light Co.

Mastin Simpson, Kansas City, Mo.

G. W. Mead, Manager, The Union Carbide Co., Chicago, Ills.

George C. Hicks, Jr., Engineer, P. H. & F. M. Roots Co., Connersville, Ind.

To the above list of membership have been added, since last year's meeting, the following:

J. B. Klumpp, Inspecting Engineer, U. G. I. Co., Philadelphia, Pa.

H. G. Stillson, Superintendent Distribution, Western United Gas and Electric Co., Aurora, Ills.

W. B. Tuttle, General Manager, Consolidated Gas Co. of New Jersey, Long Branch, N. J.

In conclusion I wish only to remind you that last year I was quite modest in making our report, and ask that you will recall that becoming modesty as an offset to the request I have to make now that you will express an opinion on the work we have undertaken, and if it seems good to you, give it such an indorsement as will carry it forward into the Institute with some impetus. Whether I or another is to be responsible for the Revision another year, I ask you to give that man the moral support that will come from the widespread knowledge among the gas fraternity that "the Ohio was for it."

H. B. Harrop, Chairman, Board of Revision.

Dr. Harrop—Gentlemen, I would like to say, in addition to what I have reported, it has come to me unofficially, since I came to this meeting, that the Executive Committee of this Association voted to reimburse me for the $178.41, I spent on revision during the last year. I did not expect this and rather regretted if it has been done. I only mentioned it to one of the members of the Executive Committee, because I wanted the committee to take up actively the prosecution of the revision work. As Mr. Tuttle was suddenly called away, he will not be able to read his report of the Committee on Select Test Methods which is a very interesting production. I will hand it, however, to the Secretary, with the request that it be included in our proceedings.

The report last above referred to was then submitted to the Secretary, and, on motion duly seconded and carried, was directed to be embodied in these proceedings, and is as follows:

Report of Committee on Select Test Methods.

To the Chairman of the Board of Revision: This Committee, which is a sub-committee of the Board of Revision, is composed at present of the following gentlemen: Mr. W. B. Tuttle, Chairman of Committee; Mr. W. B. Calkins; Mr. Clarence Lomax; Mr. J. M. Morehead; Mr. D. Wilson; Mr. E. H. Earnshaw; Mr. C. C. Tutwiler; Mr. M. R. Bump; Mr. P. A. Degner; Dr. H. P. Harrop, *ex officio*.

It is the purpose of this committee to compile a description of the best tests, and methods of testing, which may be of use to the gas profession, and in some cases to undertake investigations to determine which methods are the best and possibly to develop new methods.

The following subjects have been suggested for investigation and considerable work has already been done on some of them:

Determination of moisture in coal.

Determination of volatile matter in coal.

Determination of per cent. of ash and composition of ash.

Determination of sulphur in coal.

Determination of heating power of coal.

Ultimate analysis of coal.

Sampling coal.

Various apparatus for giving complete test for yield, candle power, tar, etc.

Determining specific gravity of coal, including discussion of relation of specific gravity to value.

Tests for cannel coal.

Complete instructions and description of tests for regulating the recuperative producer bench. CO_2, O_2, CO and N_2 in waste products and producer gas; regulation of water supply to ash pit; temperatures of recuperators, etc.

Pyrometry methods. A dependable color scale, use and case of thermo-electric pyrometer, Seeger cones, and other pyrometers.

Continuous or recording pyrometer and same for CO_2 test for chimney gas.

Complete set of tests for regulating relation between hydraulic main seal and exhauster vacuum.

Sampling gas.

Determination of amount of tar in gas at various points in condensing system.

Determination of amount of naphthaline in gas at various points in condensing system.

Determination of amount of benzine in gas at various points in condensing system.

Determination of amount of water in gas at various points in condensing system.

Determination of amount of ammonia in gas at various points in condensing system.

Determination of amount of cyanogen and sulphocyanogen in gas at various points in condensing system.

Determination of amount of CO_2 in gas at various points in condensing system.

Determination of amount H_2S in gas at various points in condensing system.

Determination of amount of sulphur other than H_2S in gas at various points in condensing system.

Tests for regulating condensing temperatures to get best results.

Tests for regulating scrubbing to remove most CO_2.

Tests for regulating scrubbing to remove most NH_3 with least water.

Tests for regulating boxes, including amount of air supplied.

Standard methods for making and keeping turmeric paper, litmus paper, lead paper, etc.

Continuous H_2S indicator or recorder.

Complete analysis of water gas and coal gas.

Investigation of behavior of caustic potash solution toward benzene, and cuprous chloride solution toward heavy hydrocarbons.

Determination of benzene.

Determination of heavy hydrocarbons.

Determination of different gaseous paraffins.

Short method for determining nitrogen.

Determining specific gravity of gas.

Continuous indicator for O_2, N_2, or CO_2.

Determining heat power of gas.

Apparatus, standards and methods for candle power test, and complete description of a standard method.

Use and limitations of jet photometers.

Specifications for open flame and incandescent gas burners and tests.

Methods of test for fuel gas appliances.

Analysis of coke.

Determination of NH_3 in crude and concentrated ammonia liquor.

Standardizing volumetric apparatus and solutions.

Determination of CO_2 in ammonia liquor.

Special analysis of ammonia liquor.

Tests for controlling concentrator, testing lime, testing waste liquor, testing waste gases.

Testing coal tar for water, free carbon.

Complete commercial analysis of coal tar.

Testing pitch and refined tar.

Testing light and heavy creosote oils.

Testing water gas tar for free carbon, water and oil.

Specifications and tests for crude petroleum, gas oil and naphtha.

Tests for regulating water gas manufacture.

Water analysis and corrosions.

Examination of purchases.

In order to get the benefit of such experimental work as has already been developed, and in order to determine in a measure what would be of greatest immediate value to the gas industry, the following circular letter has been sent out to the gas companies in the United States:

To the Manager, Superintendent or Chemist—Dear Sir: The committee appointed by the Ohio Gas Light Association to investigate gas works tests needs your assistance. It is proposed that a collection and comparison of all works tests be made, with the idea of selecting and publishing the best methods. You are therefore requested to advise us in regard to the following questions at your earliest convenience:

1. How do you test the illuminating value of your gas?
2. How do you test the calorific value of your gas?
3. How do you test your gas for H_2S?
4. How do you test your gas for other sulphur compounds?
5. How do you test your scrubbed gas for ammonia?
6. How do you test your crude gas for ammonia?
7. How do you test your ammoniacal liquor?
8. How do you test the various kinds of coal you use?
9. How do you test your iron oxide of sulphur?
10. How do you test your gas oil?
11. What other tests do you make?
12. What criticisms have you for any of these methods you use?
13. Are there any tests that you do not make, but would make if you knew of a good method?
14. Are there any tests not mentioned above that you would like information about?

In answering each of the above questions please describe fully both the apparatus used and the way in which you make the test.

A stamped envelope is inclosed herewith for your reply.

Very truly yours, W. B. Tuttle, Chairman.

It was particularly requested that full description of apparatus in use and of methods should be included in the answer to this letter, but while some companies reported very fully, a great many contented themselves with very short statements.

A general summary of the replies may be of interest.

1. Fifty companies reported that they used various forms of bar photometer. Four companies reported that they used the Hefner lamp as a standard. Eight that they used candles. Nine that they used pentane lamp. Two that they used Argands with Edgerton slit. Argands, lava tips and Bray burners were reported as being used on the testing end of the bar. Forty-three companies reported that they used jet photometers, and two companies reported that they used illuminating power meters. Very little was reported as to the actual methods and precautions used in making candle power tests. A number of companies reported that they made no candle power tests at all, but depended on the eye of the superintendent.

2. Twenty companies reported that they made tests of the colorific value of their gas with a Junker or other calorometer and eight companies reported that they figured the calorific value from analysis.

3. Sixty-five companies reported the use of lead acetate as a qualitative test for H_2S. Quantitative tests were reported as follows: Silver nitrate method, 1 company; iodine method, 15 companies; cadmium chloride method, 2 companies; copper phosphate method, 1 company; arsenious acid method, 1 company.

4. Fifteen companies reported that they used the referees' test for sulphur compounds other than H_2S. Three companies that they used platinized asbestos; three that they used Drehschmidt's apparatus, and one that they used Elliott's apparatus.

5. Twenty-two companies reported that they made a titration test on ammonia in finished gas, after bubbling through normal acid. Fourteen companies reported that they made qualitative tests with turmeric or litmus paper.

6. Twenty-seven companies reported that titration tests were made of ammoniacal liquor and 5 companies reported that they depended on the hydrometer.

8. Three companies reported that they made calorimeter tests of their coal, 19 that they made analyses, 7 that they made careful works' tests, and 3 that they used experimental retorts.

9. Seventeen companies reported that they extracted the sulphur fro m oxide by the use of carbon bisulphide. One company reported that the tar was first removed by cold benzene, and 4 reported the use of nitric acid to separate the tar, etc., from the sulphur. One company reported that they burned the oxide and collected the SO_2 in caustic potash.

10. Seven companies reported that they made specific gravity tests of gas oil, 2 that they made flash point tests and 10 that they made distillation tests. Three companies reported tests for sulphur.

11. Nine companies reported tests for naphthaline, two comp anies tests for fixed carbon in tar, one company a test for lime, nine companies gas analysis, two companies flue gas analysis, two companies on exide during manufacture for metallic iron. Six companies tests for water in tar, three companies specific gravity tests, one company a test on waste liquor from still for lime and for ammonia, and one company tests on firebrick.

There seemed to be a general demand for quan titative tests for H_2S, CS_2, naphthaline, cyanogen, benzene vapors, various illuminants and nitrogen, and particularly for a good method for testing coal and gas oil. There was also considerable inquiry as to a method for determining heats in water gas apparatus.

It is the desire of the committee to push this work along as fast as possible and those who may have new or original methods for any of the tests are urged to communicate fully in regard to them as promptly as possible. The committee also wishes to express thanks to those who have already sent in the various, carefully and fully prepared reports on apparatus and methods of testing which have been received.

W. B. Tuttle,
Chairman, Committee on Select Test Methods.

The President—Gentlemen, you have heard the report, what shall we do with it? I would suggest that the Committee which will represent this Association in the organization of the new Gas Institute be requested to particularly emphasize the fact, that the Question Box and the Revision thereof, are matters which the Ohio Association considers

very important and of great benefit to the gas industry and to endeavor to have them incorporated into the proposed plan for the new Institute.

Mr. Shattuck—I will make such a motion Mr. President. I do not think Dr. Harrop has said a word too much in referring to the importance of the Question Box or emphasizing the value or amount of work done upon it. There are a great many men who have put in a great deal of their individual time on this Revision Board and personally I should very much hate to see the work discontinued.

It was then moved, duly seconded and unanimously adopted, that the Ohio Gas Light Association authorize and direct its committee, acting with committees from other Associations in the formation of the American Gas Institute, to present to the general committee the importance of the work thus far carried on by the Question Box department and the Revision Board and to emphasize the fact that the Ohio Gas Light Association considers this work of great importance and benefit to the gas industry at large and that this Association desires to place itself on record as recommending the continuance of this work by the American Gas Institute.

The President—The next business in order is the report of the committee on the next place of meeting. I presume that report will be deferred until after a conference can be had with similar committees from the other associations. If there is no motion to the contrary, that course may be pursued. The next business in order is the report of the Committee on Nominations.

Mr. Fred. Persons, Chairman, then submitted the following

REPORT OF THE COMMITTEE ON NOMINATIONS:

To the Ohio Gas Light Association—Gentlemen: Your Committee on Nomination of Officers for the ensuing year take pleasure in submitting the following report. We recommend the election of the following:

President—Benjamin W. Perkins, South Bend, Ind.
Vice-President—Norman G. Kenan, Cincinnati, O.
Secretary and Treasurer—Thomas Clive Jones, Delaware, O.
Executive Committee—W. E. Steinwedell, Cleveland, O.; C. R. Faben, Jr., Toledo, O.
Question Box—Henry L. Doherty, Editor, New York City.
Progress Department—A. E. Forstall, Editor, New York City.
Novelty Advertising and New Business Methods Department—Geo. Williams, Editor, Madison, Wis.
Wrinkle Department—W. E. Steinwedell, Editor, Cleveland, O.
Information Bureau—H. L. Olds. Editor, Lincoln, Ills.
Committee on Uniformity of Gas Meters—Chas. H. Dickey, Baltimore, Md.: Paul Doty, St. Paul, Minn.; H. C. Abell, Muskegon, Mich.
Committee on Standard Methods of Testing Gas Fuel Appliances—Henry L. Doherty, New York City; F. W. Stone, Ashtabula, O.; John Franklin, Cincinnati. O.
Committee on Uniform System of Mapping Street Mains—W. H. Barthold, Saginaw, Mich.
Committee on High Pressure Distribution—J. D. Shattuck, Chester, Pa; H. A. Carpenter, Pittsburgh, Pa.; J. O. Johnston, Columbus, O.; W. H. Hammon, Pittsburgh, Pa.
Committee on Revision—Dr. H. B. Harrop, Chairman, Milwaukee, Wis.
Bureau of Forms and Records—D. W. Low, Editor, Alliance, O.

Respectfully submitted, F. R. PERSONS, M. E. MALONE, JOHN D. MCILHENNY, } Committee.

It was then moved, duly seconded and unanimously carried, that Mr. Persons, as Chairman of the Nominating Committee, be instructed to cast the ballot of the Association for the election of the various nominees to the respective offices as recommended by the report of the Committee on Nominations.

ELECTION OF OFFICERS.

Mr. Persons—Gentlemen, I take pleasure in casting the ballot of the Association for the election of the various nominees to the respective offices as recommended in this report.

The President—Gentlemen, it is now my duty and pleasure to lay down this heavy gavel and turn it over to your new President, Benjamin W. Perkins.

Mr. Butterworth—We want a speech from Mr. Perkins.

Mr. B. W. Perkins, the newly elected President, was then escorted to the President's Chair amid a hearty round of applause, and said: Fellow members of the Ohio Gas Light Association, I thank you most cordially for this honor, although it does not seem my good fortune to preside at a future session of this Association, in view of the action which has been taken with reference to the formation of the new American Gas Institute. If, however, it should be my good fortune to so preside, I wish to assure you that my efforts shall always be directed toward the benefit of the Ohio Gas Light Association in the future, as they have been in the past, to the limit of my ability. My thanks to the Association are none the less hearty, however, in view of the fact that this may be our last meeting. The Ohio Gas Light Association is an Association which I have been most proud to belong to. I think it is the most progressive Association in the country. I thank you. (Applause.)

THE REPORT OF THE COMMITTEE ON FINAL RESOLUTIONS

was called for, and Dr. H. B. Harrop, Chairman, read the following:

To the Ohio Gas Light Association—Gentlemen: Your Committee on Final Resolutions reports as follows:

Whereas, The 22d annual meeting of the Ohio Gas Light Associatian, in all probability its final meeting, has been profitable in papers, reports and discussions; and

Whereas, The meetings and interims have been pleasant in every way and show that the most painstaking thought has been given to our comfort, it is

Resolved, that we tender our thanks to all who have aided in making it a success.

DR. H. B. HARROP, F. W. STONE, H. D. HARPER, } Committee.

On motion, duly seconded, the report of the Committee was then adopted and ordered spread upon the minutes.

Mr. McDonald—Gentlemen, before final adjournment, Mr. Earnshaw, of the Cincinnati Gas and Electric Company, desires to add another straw to the load of obligation he has already placed upon us and has requested me to say that at 3 o'clock this afternoon the Committee will leave the hotel for a visit to the Western Works of the local company and all members who are able to go are cordially invited to accompany the committee. The local company has built a new retort at the works, on probably as advanced lines as any retort in the United States, and no doubt a great many of our members would like to see it.

President Perkins—I presume that requires no action by the Association further than to request those to go who can. There is no doubt but what it will be very interesting and beneficial to the members to see these works. On behalf of the Association I will say to Mr. Earnshaw that we accept this cordial invitation with thanks.

Mr. Little—Mr. President, I would like to direct attention to the fact that in New York there has been organized an Illuminating Engineers' Society, the purpose of which is to discuss matters of illumination. From what I have seen of these meetings they are mostly made up of electric men. There are very few gas men. If it is convenient for you to look into this subject I think it would be very valuable for you to do so, because at these meetings a great many subjects are discussed relating to the problem of illumination which will be just as valuable to the gas men as to the electric men. Prominent experts are suggesting different schemes of illumination and I know that these gatherings will be very instructive to all gas men. If convenient for you to look into the matter I am sure you will find it very profitable. The parent body, as I understand, meets in New York city, but branches are being established in Boston and Chicago. The way it is starting off it looks as though it was going to be a very aggressive organization.

Mr. McDonald—I now move you that this Association adjourn, not *sine die*, but to a time and place whenever a gas man shall meet his "friend and neighbor." (Motion seconded.)

President Perkins—Gentlemen, you have heard the motion as stated by Mr. McDonald. Mr. Butterworth, have you anything to say?

Mr. Butterworth—Theorectically I ought to have something to say, Mr. President, because I have been identified with the Ohio Gas Light Association so long and so intimately that a sentimental feeling is aroused by the apparent proposed abondonment of this Association; although I take it that this is another instance where there is no death, but what seems so, is simply transition. This is not the death of the Ohio Gas Light Association, but simply its transition in the Heaven of the American Gas Institute, because it has been so good all these years. (Laughter and applause.) I have a great many eloquent thoughts in connection with this matter, but I am not an orator like Brutus, so that I cannot express them eloquently. I was present at the organization of the Ohio Gas Light Association. I do not claim to be the oldest man in the room, either. It was in 1884 when I was in the employ of the Columbus Gas Company. Mr. McMillin was the father

of this Association. He conceived the idea of organizing a State Association. By the way that was the first Association in the United States. Mr. McMillin was then Superintendent of the gas works at Columbus, O., and he and Mr. C. M. Converse, of Delaware, and one or two others, including, I think, Mr. Eugene Printz, of Zanesville, Henry J. Reimund, of Lancaster, and Gen. Asa S. Bushnell, of Springfield, decided to call a meeting of Ohio men to form a State Association. Ohio had then about 80 gas companies. They were all coal gas companies, I believe, every one of them. They felt that they were operating under similar conditions as to State laws, coal supply and climate, and they thought they could get together and discuss to great advantage, the various subjects of mutual interests to each of them. Mr. McMillin and Mr. Converse sent out a circular to all of the gas companies of the State. They held their preliminary meeting at the Park Hotel, Columbus, O., in September, 1884. I had just entered the gas business, and I remember I took the proceedings in shorthand and reported them to the AMERICAN GAS LIGHT JOURNAL. If you look back over the pages of that Journal you will see the report of the meeting of the organization of the Ohio Gas Light Association in the fall of 1884. The first regular annual meeting was held the following spring in Cincinnati, O. Mr. Andrew Hickenlooper was then President, and I remember we visited the East End Station at that time just as we did yesterday. It looked very much the same then as it does now, too. I was Secretary of the Ohio Gas Light Association for 8 years and in spite of that fact I think it has been one of the best Gas Associations in the country.

Mr. McDonald—You mean because of that fact?

Mr. Butterworth—It is a very unique organization in some respects. For instance, it made no distinction between the real gas men and the supply men. The supply men were eligible to active membership. Virtually there has been but one class of members in this Association and that is the active membership. Of course, we have elected a few honorary members. In the early days the meetings were always held in a small room, probably half as large as this, where we could all be seated close together and talk in a conversational way. The gas man from the smaller town would have the courage to get up and ask any kind of a question and participate in the discussions. At that time, of course, there were many small companies who sent representatives to the meetings, and I am satisfied that those who attended the Ohio meetings received more benefit than the members of any other organization secured by attending any other meetings. If the representative from a smaller gas works wanted to get up and ask whether it was better to run 4 retorts during daytime and to shut them down at night, or to run 2 at night or 2 during the day, he could do it without being laughed at. I think the Association in its later years, largely through the initiative and energy of Henry L. Doherty, has made a new definition for gas association work. I think it has set the pace and has probably done more by its work along these lines to start the idea of the American Gas Institute and to make its formation possible than any other Association in the United States. That is my individual opinion about it. Now, gentlemen, I do not want to make this a solemn occasion at all. I think we had our "wake" last night at the brewery. (Laughter.) I just felt as Chairman of the Undertaking Committee, in presenting the obsequies on this occasion, that I ought to say a few words of this character, and I only wish that I could have said them better. I think Mr. Printz and Mr. Stacey are the only gentlemen present to-day who attended the first meeting in 1884, and I would suggest that the President call on them for a few remarks.

Mr. Eugene Printz, of Zanesville, O., was then called on, and said: Mr. President and Gentlemen, I have been called upon to make a speech. That is something I cannot do. As Mr. Butterworth has stated, at the earlier meetings of the Ohio Gas Light Association we got together, a dozen or so of us, in a small room, and took up matters connected with the gas industry and discussed them in a conversational way. We all received a great deal of benefit from those meetings and from those discussions. I thank you for calling on me.

Mr. Persons—In addition to what Mr. Butterworth has said, I wish to mention the fact in this connection, that at that time there was only one water gas plant in the State of Ohio. That was located up at Elyria and I was probably the only unruly child in the gas business in this State at that time. You can all look back and remember how in those day the water gas plant was ostracized and everybody connected with it. I don't suppose that there was a gas works in the State that would even let me into the yard. I joined the Association a few years later, though.

Mr. F. A. Stacey, of Chillicothe, O., was then called on and said: Mr. President and fellow Members of the Ohio Gas Light Association, I have been informed that you would like to have a few remarks from me as being one of the original members of this Association and as being one of the very few original members present at this meeting. I may say, that being hard of hearing I have not been able to hear all that has been said on this subject. I can simply say that I was present at the preliminary organization of the Ohio Gas Light Association at the Park Hotel in Columbus, and that after a lapse of 20 odd years I have never regretted it. I think the Ohio Association has been one of the greatest boons we have ever had in the gas industry. It has brought more people together and it has disseminated more general and scientific information than any other similar organization in the country. The members have all enjoyed themselves better, it has seemed to me, than in any other association I have attended. This present movement—I am not familiar with it. I do not know whether it is a burial or whether it is a wedding, but whatever it is I will do all I can to assist the Ohio Association in any movement she desires to take. (Great Applause.)

On motion, duly seconded and carried, the twenty-second annual meeting of the Ohio Gas Light Association then adjourned.

Lead Wool and Solid Pipe Joints.[1]

The extensive testimony that lies before us, from gas and water works on the Continent, is sufficient justification for recommending to the notice of readers the usefulness of "lead wool" for making pipe joints, and for anticipating that experience with it in this country will fully corroborate all the good things that are said about it on the Continent. "Lead wool" has made its way largely into canalization work—both for gas and water—on the Continent, and there is every prospect that, now that it is being introduced into this country, it will also do so here, both on account of its simplicity and handiness and its effectiveness in making solid joints, and not only new joints, but in making sound old ones that are in a leaky condition. The British patents have been acquired by the Lead Wool Company, of Snodland, Kent, and it is from them that samples of the material for making the joints have been received.

The use of the term "wool" does not properly describe the material. It really consists of fine threads cut from pure virgin lead by patent machinery, and is sent out in strands weighing about 1 pound each, and being about 3 feet long. In this state it is quite ready for the pipe jointers, who only require with this material their caulking tools, and the necessary yarn to put into the pipe before applying the "lead wool." In short, this lead wool means that, in his equipment, the jointer need no longer be worried by fires, fuel, fire devils, lead pots, ladles, and clay for bands. One man alone with these strands of finely cut thread can make a solidly welded joint with all the space in the socket completely and tightly filled. Nor need wet weather or damp situations cause delay in the work of jointing.

The method of use is simply this: The joints are yarned in the ordinary manner, but to a greater depth than is customary. The lead wool is simply twisted up to fit the annular space in the socket, and is then wound round the pipe. It is essential, for a sound job to be made, that each winding of the lead wool round the pipe should be caulked well before making the next turn. If this is done, a solid and effective joint from back to front will be the result; whereas with the cast lead joint, owing to shrinkage on cooling, it is only the front part of the joint that is really effective. Thanks to the solidity of the joint, it is only necessary to use a little more than half the amount of lead as compared with the cast joint. These are two important points. The one suggests strength and a capacity for standing great pressure, while the other suggests that this tightness of joint, the conveniences, and other advantages are (although the cost of the patent lead wool is somewhat higher than the solid lead weight for weight) to be obtained without additional cost, and perhaps for rather less cost for any given length of pipe work.

As evidence of strength, pipes jointed with the new material have been recently subjected to some high pressures at the Austro German Mannesmann Tube Works, and these are some of the results:

Diameter of Pipes.	To Square Inch.
8-inch	At 1,650 pounds, the testing flanges leaked, but not the joints.
6-inch	At 2,250 pounds, very slight leakage.
5-inch	At 2,700 pounds, testing flange leaked, but not the joints.
4-inch	At 3,000 pounds, testing flange leaked, but not the joints.
3 inch	At 3,450 pounds, joints began to give.

1. *Journal of Gas Lighting.*

The following comparative tables show the economy in the weight of lead needed to make joints by lead wool as compared with cast lead:

When Using Cast Lead for Gas Pipes (Newbigging).

Diameter of Pipe, Inches.	Depth of Lead Ring, Inches.	Weight of Lead per Socket—Pounds.
3	1⅝	2¾
4	1¾	4
5	1⅞	5½
6	2	7
8	2⅛	10½
10	2¼	14½
12	2⅜	18½
14	2⅝	23½
16	2½	28½
18	2⅝	32½
20	2⅞	35½
24	3	48

When Using Lead Wool.

Diameter of Pipe. Inches.	Gas Pipes—Depth of Lead Ring. Inches.	Gas Pipes—Weight of Lead per Socket. Lbs.	Gas Pipes—Weight of Lead per Socket. Ozs.	Water Pipes—Death of Lead Ring. Inches.	Water Pipes—Weight of Lead per Socket. Lbs.	Water Pipes—Weight of Lead per Socket. Ozs.
3	1 1/16	1	9	1 3/16	1	12
4	1 1/16	2	0	1 3/16	2	3
5	1 1/16	2	7	1 3/16	2	13
6	1 3/16	3	3	1⅛	3	9
8	1 3/16	4	6	1⅛	4	15
10	1¼	6	5	1⅛	7	2
12	1⅜	7	8	1⅛	8	7
14	1⅜	8	2	1⅛	9	2
16	1½	11	0	1⅛	12	9
18	1½	12	4	1⅛	13	13
20	1½	14	12	1⅛	16	11
23	1½	19	9	1⅛	22	0

With regard to other advantages, there is no claim advanced in the matter of time saved in making a joint—though the balance is said to be a little on the side of lead wool. But it is evident that there must be a saving of labor in view of the abolition of melting pots, fires, clay bands, etc., and the drying out of wet joints. There is also the question of the saving of waste; and, after a little experience, the storekeeper should be quite able, on receiving information as to the character of a job, to gauge almost to a nicety the quantity of material that will be needed. On the whole, therefore, it may be expected that, in respect of the final cost, the making of joints by this new method will be found somewhat cheaper than the old one. At any rate, the perfectly solid joint, and the convenience of the new system of jointing and repairing created by the production of the lead wool, will insure a trial in many different quarters; and a trial may possibly result in permanent use.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

THE St. Louis Gas Construction Company, of St. Louis, Mo., has just completed the installation of 4 benches at the works of the La Porte (Ind.) Gas Light Company, and 5 benches for the Nashville (Tenn.) Carbon and Oil Company. They have also recently been awarded the contracts for 4 benches at St. John, N. B., on the Atlantic Coast, and 6 benches on the Pacific Coast for Bellingham and Everett, Wash., and Eugene, Ore. They have just completed shipment of settings for 24 benches of through 8's for the Milwaukee (Wis.) Gas Light Company, and 15 cars of special water gas linings for the Denver Gas and Electric Company. This Company will also furnish all the material for the 12 new benches of through 6's for the Utah Gas and Coke Company, to be erected at Salt Lake City.

MR. FREDERICK J. MAYER, who has for many years, been the chief engineer for the Bartlett, Hayward & Company, of Baltimore, Md., has severed his connection with this firm. Mr. Mayer, however, does not take off his harness, but continues to be very much identified with the gas interests. He proposes to conduct a gas engineering office for consulting and contracting, making a specialty of vertical benches under the Bueb patents of Dessau. Mr. Mayer controls other patents for gas machinery and gas systems for this country, and from his extensive operations for the above Company, in connection with some of the largest companies in the United States, he goes into this work independently, well equipped to give excellent satisfaction, and those who require his services as consulting engineer or otherwise in the profession are asked to communicate with him at his office, corner of Scott and McHenry streets, Baltimore, Md. We wish Mr. Mayer good luck as we know he deserves it.

LEOMINSTER, MASS., is promised a reduction in the price of gas, beginning in July.

THE Poughkeepsie (N. Y.) Gas Company proposes piping gas to Arlington.

THE incorporation of the Watertown (N. Y.) Gas Light Company and the Watertown Electric Light Company, as the Watertown Light and Power Company, has been accomplished. It means a coming together of John B. Taylor and Dewitt C. Middleton and their interests and an end of rivalry and competition. The new corporation will have a capital stock of $1,000,000 and control of practically all the water power available for the development of electricity. The Directors for the first year will be: Dewitt C. Middleton, George S. McCartin and E. Brown, of Watertown; John D. McMahon, of Rome, and James T. Lynn, of Detroit, Mich.

MR. H. Y. SAINT, the Spokane newspaper man, the present owner of the gas franchise voted by the taxpaying electors of Great Falls, Mont., to Henry W. Mahany or his assigns, left that city, after filing with the city clerk a notice of his acceptance of the franchise. Mr. Saint declined to file the $20,000 bond required by the franchise as a guarantee of the good faith of the grantee. His attorneys advised him that the provision of the franchise concerning the bond was non-enforceable, and that, by filing his notice of acceptance of the franchise, the franchise became effective at once.

AN explosion of a gas blower followed by fire damaged the Milwaukee (Wis.) Gas Company's engine room to the extent of $5,000.

THE Home Gas Company and the San Bernardino (Cal.) Gas and Electric Companies are involved in a rate war.

THE stockholders of the City Gas Company, of Norfolk, Va., have arranged to turn over all of its properties to the Norfolk and Portsmouth Traction Company, recently organized with a capital of $14,000,000, and which has absorbed most of the trolley lines, ferries and gas and electric properties in Norfolk and Portsmouth and vicinity. Williams, Middendorf & Company, of Baltimore, were designated as registers of the stock.

MR. S. M. HIGHLANDS, formerly of Pittsburgh, Pa., general manager of the Clinton Gas Light and Coke Company, and one of the principal stockholders in the concern, has disposed of his interest in the Clinton Company and will retire from active business life. His successor has not been appointed. Mr. Highlands had been connected with the plant for 15 years.

AT the annual election meeting of the stockholders of the Binghamton (N. Y.) Gas Works, the following Directors were re-elected: W. G. Phelps, George W. Dunn, Charles M. Stone, J. W. Manier, J. T. Deyo, S. J. Hirschmann, George F. O'Neil, Emerson McMillan, of New York, and Dr. Stevens, of Brooklyn. The Directors elected Mr. McMillan President, Mr. Manier Vice-President, and E. E. Eysenbach Secretary.

THE gas of the Kingston (N. Y.) Gas Company is undergoing an investigation by Dr. Love, of New York. The price is satisfactory however.

THE Boston (Mass.) *Transcript* says: "While the new sliding scale gas bill, with the 85-cent gas already announced for July 1st, promises to defer for a long time at least the movement here for municipal ownership of this industry, it is interesting to note that Richmond, Ind., which built its own gas plant and operated it under three administrations of a radical mayor, has just voted to sell out the business to a private corporation. Consumers there obtained cheaper gas under municipal ownership, but no allowance was made for interest on $200,000 of bonds which the city issued, nor for depreciation in the value of the plant. The city, too, had to pay more for its lighting. The taxpayers were wise enough to see through this scheme and to realize that regulated private enterprise after all offered the best all-round results."

E. G. CARTER, of St. Louis, and others, have obtained a gas and electric franchise in Memphis, Tenn. The latter plant will be built immediately, the former later.

E. W. CLARK & Co., the Philadelphia bankers, who exploited the franchises of the Gas and Electric Company and the Rochester Railway Company and sold out to the New York Central interests, have just completed a $3,000,000 deal in Oregon, by which all the light, power and traction companies in the Willamette Valley, including those of Portland, Ore., are brought under the Clark control. J. W. Seligman and Charles Pratt & Co., of New York, are associated with the Clarks in the scheme.

THE Kuehnie Consumers Gas Company of Atlantic City, N. J., recently won in the city contract suit and will furnish the gas lights for the city at $15 per light. The Atlantic City Gas Company—the old Company—certioraried the recent contract given by City Council and the Supreme Court decided in favor of Council's award.

THE employees of the Denver (Col.) Gas and Electric Company have formed a union. The organization was perfected and a charter from the American Federation will soon be obtained. It will affiliate with the Denver Trades and Labor Assembly. There are nearly 50 charter members. Of this number nearly all signed the application for the charter.

THE Cleveland (O.) Gas and Electric Fixtures Company has been incorporated at Cleveland, O., and capitalized at $250,000.

THE Norwich, Conn., bulletin, says: "The property of all citizens is paying a 1½-mill tax on the gas bonds and shortages—that the citizens who own little homes without gas are paying a share of the gas expense of those who do burn it." Norwich has a municipal gas and electric plant.

STATE SENATOR ANDREW FYFE has secured a franchise for supplying the city of Stoughton, Wis., with gas, the franchise having been granted through his efforts by the City Council, to the Warren and Pettigrew Construction Company, of Fox Lake, Wis. Its population is about 6,000, and it is located about 80 miles from Milwaukee and about 16 miles from Madison, the State capital. Milwaukee and Madison companies contested for the franchise with Senator Fyfe, all 3 bids being at the same price, $1.25 per 1,000 feet. The franchise will be transferred later to a corporation to be formed for the purpose, but this will not be done for 2 months, as the Wisconsin laws give that length of time for a possible referendum of all franchises to popular vote.

C. D. HAUK, of Bemus Point, N. Y., has forfeited his franchise at Youngstown, O.

THE City Council, of Charlottesville, Va., recently voted to lease the city gas plant for a period of 20 years to Washington capitalists.

THE Allentown (Pa.) Gas Company is replacing an old gas main on 7th street, between Chew and Gordon, with new pipes. Thus far this season the Company has laid 7,000 feet of pipes and has 20,000 more feet on hand.

AT a meeting of New Brunswick (N. J.) Gas Company stockholders, held recently, the former officers were re-elected: J. Bayard Kirkpatrick, President; John C. Eisele, Treasurer; H. M. Barrett, Secretary.

GAS at Macon, Ga., will be reduced from $1.50 to $1.35 per 1,000.

AT East Boston, Mass., the price of gas will be at $1.10 per 1,000 feet after July 1, and at $1 after January 1, 1907.

A GAS company was organized at Boyertown, Pa., $5,000 capital.

THE Collegeville (Pa.) Gas Company has been organized with a capital stock of $10,000, divided into 100 shares of $100 each.

CHARLES ROSS, arrested in April on a charge of larceny, preferred by the Milwaukee (Wis.) Gas Light Company, was denied a new trial in Judge Neelen's court and was fined $50. Arguments were made by James H. Stover, attorney for the flat owner, who by tapping the service pipes of the Gas Company is said to have used $27,000 worth of gas for heating his buildings in Brady street and Warren avenue. Assistant District Attorney A. C. Backus appeared for the prosecution. Mr. Backus urged that the defendant be given a prison sentence, but the court declined to do so. The case just settled was in connection with the charge of gas stealing at the premises in Warren avenue. The civil suit in which the Gas Company claims $27,000 as payment for gas used during a period of 7 years still is to be tried. Attorney Stover said that Ross attempted to make a settlement with Col. E. G. Pratt, then General Manager of the Gas Company, before the arrest took place.

BY an overwhelming majority Sibley, Ia., voted to build a gas plant and issue bonds in payment therefor. The vote was 336 to 33 against. Women to the number of 147 voted nearly unanimously in the affirmative.

THE Village Council of Wakefield, Neb., let the contract for a $4,500 gas lighting plant, the North Chicago Company, of which Mr. Rowe, Sioux City, Ia., is the representative, being the successful bidder. The plant is to be installed at once and ready for business by the 1st of September.

THE new superintendent of the Chambersburg (Pa.) Gas Company, is H. W. Benner, of Bethlehem, who arrived here recently and immediately entered upon his duties. Mr. Benner has had considerable experience in the gas business and comes to Chambersburg well recommended.

AFTER an examination by gas experts, among whom was Mr. Charles E. White, of Wakefield, Mass., it was found that the Middleboro, Mass., gas matters were found to be in a corrupt condition. Many business men using large quantities of gas were found to be free customers, and electric light is also purveyed at different prices to the same class of consumers. Other evidences of *graft* were found. We mention this in passing, as it is hoped that it will be brought to the attention of the public by the readers of this JOURNAL.

THE basis of dividend contained in the Sliding Scale Bill for the Boston Consolidated Gas Company is 7 per cent., when gas is sold at 90 cents, and with every 5 cents reduction an increase of 1 per cent.

MR. GEORGE W. GRAVES, of New York city, called a meeting of the Eastern Gas Stove Manufacturers on June 7th, and the men present took steps to organize permanently; the next meeting will be at the Hollenden Hotel, Cleveland, O., June 25th. The Western stove manufacturers will please take notice.

THE Everett (Mass.) Gas Company is installing six 40 by 40 by 10 feet purifiers, and a large number of tar extractors. It is thought there will either be an increase in the generating capacity, or else a new method of purification, with respect to the bisulphite of carbon, which has been developed by the Company.

MR. EVERETT W. BURDETT, of Boston, who is the Attorney for the Boston Consolidated Gas Company, and who recently wrote an excellent article for one of the monthly magazines, on gas rates and municipal ownership, etc., and of which we wrote some issues back, read a very interesting article in the form of a lecture before the National Electric Light Association, which met at Atlantic City. We would advise those who did not have the good fortune to hear it, to read it.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 10 cents.

822,932. Burner for gas ranges. Charles Ennis, Boston, Mass., assignor of one-half to Frank L. Golding, same place.

823,084. Gas regulator for incandescent lights. Hermann Schuppisser, Zurich, Switzerland.

823,165. Gas burner. Frederick Egge, Bridgeport, Conn.

823,261. Hood for gas jets. Frank B. Cather, Grafton, W. Va.

823,267. Gas heater. Carl Eickenmeyer, Yonkers, N. Y.

823,308. Gas burner. Heinrich Sussmann, Berlin, Germany, assignor to Deutsche Gasluhlicht-Aktiengesellschaft, same place.

823,309. Inverted incandescent gas burner. Heinrich Sussman, Berlin, Germany, assignor to Deutsche Gasgluhlicht-Aktiengesellschaft, same place.

823,475. Gas burner. George Machlet, Jr., Elizabeth, N. J.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

MONDAY, JUNE 25, 1906.

The Market for Gas Securities.

The trustees of the Massachusetts Gas Company have declared an initial dividend of 1 per cent. on the common stock.

The plan for the consolidation of the Consolidated Gas Company, of Baltimore, with the Consolidated Gas, Electric Light and Power Company, is made public. The latter Company owns 61 per cent. of the stock of the former and there is to be a scaling down of capital. The minority stockholders of the Gas Company are offered 80 per cent. in new preferred and 50 per cent. in common for their holdings, while the preferred stockholders of the Consolidated Gas, Electric Light and Power Company are offered 50 per cent. in new preferred and 40 per cent. in new common. The common stockholders are offered 30 per cent. in new common, while the holders of the prior lien stock, of which there is only $700,000 outstanding, are to re-receive 100 per cent. A syndicate has been formed by the Continental Trust Company, of Baltimore, which offers $83 a share for the stock of the Gas Company, and proposes to place all acquired in the consolidation. The Company has also formed a syndicate which has underwritten the entire issue of common stock of the new Company at 40 per cent. on the par value, and every stockholder of both Companies has the option of either accepting the new common stock of the Consolidated Company, or, in lieu thereof, $40 a share in cash. The stockholders of the Gas Company are offered the further option to exchange the new preferred stock receivable by them for the 1½ per cent. general mortgage bonds, part of the $7,102,000 of such bonds heretofore issued by the Power Company on the basis of exchange of bonds at par for the preferred stock at par, provided notice of such election is served on the Trust Company not later than June 28. After the merger had been effected the new Company elected Directors as follows: Messrs. S. Davies Warfield, Gen. Ferdinand C. Latrobe, Alten S. Miller, Alexander Brown, Charles T. Crane, Charles H. Dickey, Francis H. Hambleton, Frederick W. Wood, Charles Adler, Fairfax S. Landstreet, Thomas J. Hayward and Wm. A. Marburg, all of Baltimore, and John B. Dennis, Anthony N. Brady and Thomas F. Ryan, of New York. Mr. Warfield was made Chairman of the Board, which will ultimately be increased to 24 members. The Board selected the following officers: President, Gen. F. C. Latrobe; Vice President and General Manager, Alten S. Miller; Treasurer, Joseph W. Clark; Asst. Treasurer, W. Stuart Symington; Secretary, Chas. M. Cohn; Manager of Electrical Department, Douglass Burnett.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

JUNE 25.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid*	*Asked.*
Consolidated	$75,177,000	100	139	140
Central Union, Bonds, 5's	4,000,000	1,000	101	104
Equitable Bonds, 6's	1,000,000	1,000	..	105
" 1st Con. 5's	4,300,000	1 000	118	120
Mutual	3,500,000	100	225	250
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co. ..				
Bonds, 5's	11,000,000	1,000	103	105
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	..	98	104
Northern Union, Bonds, 5's	1,250,000	1,000	101	103
New York and East River				
Bonds 1st 5's	3,500,000	1,000	108	111
" 1st Con. 5's	1,500,000	..	104	110
Standard	5,000,000	100	140	160
Preferred	5,000,000	100	155	175
Bonds, 1st Mortgage, 5's	1,500,000	1,000	111	114
Yonkers	999,650	500	130	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	120	130
" " Bonds (5's)	15,000,000	1,000	108	112
Bay State	50,000,000	50	5/16	¾
Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	..	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	9	10
" " Bonds, 5's	5,250,000	1,000	75	80
Capital, Sacramento	500,000	50	..	55
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	106¾
Cincinnati Gas and Electric Co.	29,500,000	100	103½	103¾
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	90	..
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	..	95
Preferred	3,026,500	100	107½	108
Consumers, Toronto	1,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	90	..
Mortgage, 6's	3,500,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	..	..	100
Detroit City Gas Co	5,000,000	50	..	50
" Prior Lien 5's	4,618,000	1,000	..	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	110	112
" Bonds, 5's	10,500,000	..	107½	108½
Indianapolis	2,000,000	..	80	79
" Bonds, 5's	2,650,000	..	104½	105
Jackson Gas Co	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	105
Preferred	2,500,000	100	95	110
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co. 1st Mtg. 6's	350,000	1,000	106	108¾
6 per cent. scrip, due 1910	100,000	25	85	87
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	6,000,000	..	137	138
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	90	90½
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1 000	..	..
2d "	2,500,000	1,000	104	..
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000		104½	105¼
San Francisco, Cal.	15,800,000	100	..	..
St. Joseph Gas Co. 1st Mtg. 5's	751,000	1,000	92	..
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	500,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¾	..
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047 000	1,000	102	..
Washington, D. C	3,600,000	20	300½	301
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
Wilmington, Del.	600,000	50	200	..

Advertisers' Index.

GAS ENGINEERS. Page

A. E. Boardman, New York City ... 1117
Baxter & Young, Detroit, Mich ... 1135
B. E. Chollar, St. Louis, Mo ... 1128
Cruse-Kemper Co., Philadelphia, Pa ... 1124
David Leavitt Hough, New York City ... 1135
Davis & Farnum Mfg. Co., Waltham, Mass ... 1136
Economical Gas Apparatus Construc'n Co., Toronto, Ont 1117
Frank D. Moses, Trenton, N. J ... 1136
Fred. Bredel Co., Milwaukee, Wis ... 1134
Frederic Egner, Washington, D. C ... 1140
H. M. Byllesby & Co., Chicago, Ills ... 1123
Humphreys & Glasgow, New York City ... 1137
Isbell-Porter Co., Newark, N J ... 1124
J. F. W. Jost, Philadelphia, Pa ... 1125
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 1136
The Gas Machinery Co., Cleveland, O ... 1120
The Jeffrey Manufacturing Co., Columbus, O ... 1134
United Gas Improvement Co., Philadelphia, Pa ... 1131
Western Gas Construction Co., Fort Wayne, Ind ... 1144

GAS WORKS APPARATUS AND CONSTRUCTION.

A. E. Boardman, New York City ... 1117
Bartlett, Hayward & Co., Baltimore, Md ... 1137
Baxter & Young, Detroit, Mich ... 1135
Connelly Iron Sponge & Governor Co., New York City ... 1134
Continental Iron Works, Brooklyn, N. Y ... 1138
Cruse-Kemper Co., Philadelphia, Pa ... 1124
Davis and Farnum Mfg. Co., Waltham, Mass ... 1136
Deily & Fowler, Philadelphia, Pa ... 1140
Economical Gas Apparatus Construc'n Co., Toronto, Ont 1117
Empire Gas Construction & Improvement Co., N. Y. City. 1125
Frank D. Moses, Trenton, N. J ... 1136
Fred. Bredel Co., Milwaukee, Wis ... 1134
G. Shepard Page's Sons, New York City ... 1135
Humphreys & Glasgow, New York City ... 1137
Isbell-Porter Company, New York City ... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 1136
Lloyd Construction Co., Detroit, Mich ... 1126
Logan Iron Works, Brooklyn, N. Y ... 1140
Quintard Iron Works, New York City ... 1137
R. D. Wood & Co., Philadelphia, Pa ... 1138
Riter-Conley Mfg. Co., Pittsburgh, Pa ... 1139
Stacey Mfg. Co., Cincinnati, O ... 1139
The Gas Machinery Co., Cleveland, O ... 1120
The Jeffrey Manufacturing Co., Columbus, O ... 1134
United Gas Improvement Co., Philadelphia, Pa ... 1131
Western Gas Construction Co., Fort Wayne, Ind ... 1144

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md ... 1137
B. E. Chollar, St. Louis, Mo ... 1128
California Light and Fuel Co., San Francisco, Cal ... 1138
Economical Gas Apparatus Construc'n Co, Toronto, Ont 1117
Fred. Bredel Co., Milwaukee, Wis ... 1134
Humphreys & Glasgow, New York City ... 1139
The Gas Machinery Co., Cleveland, O ... 1120
United Gas Improvement Co., Philadelphia, Pa ... 1131
Western Gas Construction Co., Fort Wayne, Ind ... 1144

SCRUBBERS AND CONDENSERS.

Continental Iron Works, Brooklyn, N. Y ... 1138
Cruse-Kemper Co., Philadelphia, Pa ... 1124
Davis & Farnum Mfg. Co., Waltham, Mass ... 1136
Economical Gas Apparatus Construc'n Co., Toronto, Ont 1117
Fred. Bredel Co., Milwaukee, Wis ... 1134
Isbell-Porter Co., Newark, N. J ... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 1136
Logan Iron Works, Brooklyn, N. Y ... 1140
R. D. Wood & Co., Philadelphia, Pa ... 1138
Riter-Conley Mfg. Co., Pittsburgh, Pa ... 1139
Stacey Mfg. Co., Cincinnati, O ... 1139
The Gas Machinery Co., Cleveland, O ... 1120
Western Gas Construction Co., Fort Wayne, Ind ... 1144

PRODUCER POWER PLANTS.

Economical Gas Apparatus Construc'n Co., Toronto, Ont 1117
R. D. Wood & Co., Philadelphia, Pa ... 1138

TAR AND CARBONIC ACID EXTRACTOR.

Economical Gas Apparatus Construc'n Co., Toronto, Ont. 1117
Fred. Bredel Co., Milwaukee, Wis ... 1134
Isbell-Porter Co., Newark, N. J ... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 1136
Stacey Mfg. Co., Cincinnati, O ... 1139
The Gas Machinery Co., Cleveland, O ... 1120
Western Gas Construction Co., Fort Wayne, Ind ... 1144

AMMONIA CONCENTRATORS.

Fred. Bredel Co., Milwaukee, Wis ... 1134
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 1136
Michigan Ammonia Works, Detroit, Mich ... 1116
The Gas Machinery Co., Cleveland, O ... 1120
Western Gas Construction Co., Fort Wayne, Ind ... 1144

GAS METERS.

American Meter Co., New York and Philadelphia. 1141
Detroit Meter Company, Detroit, Mich..... 1144
D. McDonald & Co., Albany, N. Y..... 1141
Helme & McIlhenny, Philadelphia, Pa..... 1143
John J. Griffin & Co., Philadelphia, Pa. 1100
Keystone Meter Co., Royersford, Pa..... 1142
Maryland Meter and Mfg. Co., Baltimore, Md.....1142
Metric Metal Co., Erie, Pa..... 1143
Nathaniel Tufts Meter Co., Boston, Mass..... 1142
New York Improved Meter Co., New York City 1142
Pittsburgh Meter Co., Pittsburgh, Pa..... 1141
Rotary Meter Co., New York City.....1119

PREPAYMENT METERS.

American Meter Co., New York and Philadelphia..... 1143
D. McDonald & Co., Albany, N. Y..... 1141
Helme & McIlhenny, Philadelphia, Pa..... 1143
John J. Griffin & Co., Philadelphia, Pa..... 1100
Keystone Meter Co., Royersford, Pa..... 1142
Nathaniel Tufts Meter Co., Boston, Mass..... 1142
New York Improved Meter Co., New York City..... 1142
Pittsburgh Meter Co., Pittsburgh, Pa..... 1141

PREPAYMENT METER ATTACHMENTS.

New York Improved Meter Co., New York City 1142
Reeves Mfg. Co., New Haven, Conn.....1141

WATER METERS.

Pittsburgh Meter Co., Pittsburgh, Pa.....1141

GAS AND WATER PIPES.

Davis & Farnum Mfg. Co., Waltham, Mass.....1136
Donaldson Iron Co., Emaus, Pa..... 1128
Economical Gas Apparatus Construc'n Co., Toronto, Ont. 1117
R. D. Wood & Co., Philadelphia, Pa..... 1138
Warren Foundry and Machine Co., New York City.... 1128

GAS COALS.

Berwind-White Coal Mining Co., New York and Phila. 1134
Perkins Co., New York City..... 1134
Westmoreland Gas Coal Co., Philadelphia, Pa 1135

SPECIALTIES FOR OIL AND PIPE LINES.

S. R. Dresser, Bradford, Pa..... 1122

GAS MAIN STOPPERS.

Safety Gas Main Stopper Co., New York City..... 1128

MAIN AND SERVICE LAYING.

Sullivan Bros., Flushing, N. Y..... 1122

GAS TAPPING MACHINES.

George Light, Dayton, O..... 1128
H. Mueller Manufacturing Co., Decatur, Ills..... 1126

CANNEL COALS.

Perkins & Co., New York City..... 1134

STOKING MACHINERY.

G. A. Bronder, New York City..... 1135

CONVEYORS.

Adam Weber Sons, New York City..... 1132
Cruse-Kemper Co., Philadelphia, Pa.....1124
C. W. Hunt Company, New York City.....1127
Dodge Coal Storage Co., New York City.....1128
Economical Gas Apparatus Construc'n Co., Toronto, Ont 1117
Fred. Bredel Co., Milwaukee, Wis. 1131
G. A. Bronder, New York City..... 1135
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
The Gas Machinery Co., Cleveland, O.....1120
The Jeffrey Manufacturing Co., Columbus, O..... 1134
The Link-Belt Engineering Co., Philadelphia, Pa... .1127
The Link-Belt Machinery Co., Chicago, Ills 1128
Western Gas Construction Co., Fort Wayne, Ind.....1144

CHARGING BARROWS & COAL WAGONS.

Davis & Farnum Mfg. Co., Waltham, Mass..... 1136
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
Stacey Mfg. Co., Cincinnati, O 1139

GAS ENRICHERS.

Standard Oil Co., New York City..... 1135
Sun Company, Pittsburgh, Pa..... 1135
The Sun Oil Co., Pittsburgh, Pa..... 1135

COKE CRUSHERS.

C. M. Keller, Columbus, Ind..... 1135
Fred. Bredel Co., Milwaukee, Wis..... 1134
The Jeffrey Manufacturing Co., Columbus, O..... 1134

GAS METER CONNECTIONS.

H. Mueller Manufacturing Co., Decatur, Ills..... 1126

GAS COCKS.

H. Mueller Manufacturing Co., Decatur, Ills..... 1126

GAS GAUGES.

The Bristol Co., Waterbury, Conn..... 1120

GAS GOVERNORS.

Connelly Iron Sponge & Governor Co., New York City. 1133
Fred. Bredel Co., Milwaukee, Wis. 1134
Isbell-Porter Co., Newark, N. J..... 1134
Johnson-Reynolds Co., Anderson, Ind..... 1135
Pittsburgh Meter Co., Pittsburgh, Pa..... 1141
R. D. Wood & Co., Philadelphia, Pa..... 1138

CEMENTS.

C. L. Gerould, Pittsburgh, Pa 1132
F. W. Stanley, New York City..... 1132

RETORTS AND FIREBRICKS.

Adam Weber Sons (Albert J. Weber's Construction).. 1132
Baltimore Retort and Firebrick Co., Baltimore, Md.. 1132
Brooklyn Firebrick Works, Brooklyn, N.Y..... 1132
Henry Maurer & Son, New York City..... 1132
James Gardner, Jr., Co., Pittsburgh, Pa..... 1139
J. H. Gautier & Co., Jersey City, N. J..... 1132
Laclede Firebrick Mfg. Co., St. Louis, Mo..... 1120
Missouri Firebrick Co., St. Louis, Mo.....1132
National Pyrogranit Co., New York City.....1132
Parker-Russell Mining and Mfg. Co., St. Louis Mo....1131
St. Louis Gas Construction Co., St. Louis, Mo..... 1132

(Continued on page 1117.)

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, PA., June 13, 1906.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable July 14th, 1906, to stockholders of record at the close of business, June 30, 1906. Checks will be mailed.

1619-4 LEWIS LILLIE, Treasurer.

WANTED,

Position as Superintendent of Works,

By practical man having 10 years' experience in the different branches of the gas business, and understanding manufacturing, distribution and construction work thoroughly. Small plant preferred

1620-2 Address, "T. A B.," care this Journal.

POSITION WANTED.

Gentleman at present in office of one of the largest Stourbridge (England) firebrick manufacturers desires similar position in America. Fourteen years' experience. Highest references.

Address, "F. B. C.,"

1620-1 Care this Journal.

WANTED,

COMPETENT GAS SOLICITORS,

At once. Apply to

WILKES BARRE GAS & ELECTRIC CO.,

1620-1 WILKES-BARRE, PA.

GAS ACCOUNTANT.

I would like to confer with some expert gas accountant. Addre s,

1620-1 "D.," care this Journal.

WANTED,

GOOD COAL GAS FOREMAN,

Competent to handle plant and high and low pressure street system in small city of 10,000 in Middle South. State experience and salary expected.

Address, "MIDDLE SOUTH,"

1619-2 Care this Journal

WANTED,

Works Foreman, at Once.

Coal gas plant near Chicago making 300,000,000 per year and growing fast. State age, experience, salary and references. Address, "T. L. J.,"

1619-2 Care this Journal.

WANTED,

To Buy in Lots from 50 to 500, Second-hand Lamp Posts.

Address,

NASSAU & SUFFOLK LIGHTING CO.,

1620-2 FREEPORT, N. Y.

Will Buy or Lease Gas Plants

In cities of over 7,000. No commissions charged. GEORGE ALBERT DROVIN, Attorney-at-Law, 1420 Chestnut St.,

1619-4 PHILADELPHIA, PA.

WANTED,

An 8-Inch, Second-hand Exhauster, with or without Engine.

Any standard make, in first-class condition.

Address, "GASARK,"

1618-4 Care this Journal.

WANTED,

Capital to Build New Gas Works and Lay Mains

In a city of 7,000 population. Or will sell franchise to right party. Apply to "G. G. J.,"

16.9-2 Care this Journal.

FOR SALE.

ONE AMMONIA WASHER-SCRUBBER.

Made by Isbell-Porter Company.
Sixteen-inch connections.
Capacity, 800,000 feet per day.
This machine is in first-class condition.

SPRINGFIELD GAS LIGHT CO.,

1620-tf SPRINGFIELD, MASS.

FOR SALE.

One Set of Purifying Boxes,

Consisting of four boxes 10 by 10 by 2, with 20-inch seal, centerseal and all connections complete. Address

THE UNION GAS AND ELECTRIC COMPANY,

1614 tf BLOOMINGTON, ILLS.

FOR SALE—BARGAIN.

50-HORSE POWER GAS ENGINE

Made by New Era Engine Company, Dayton, O. Fine condition. Has been run 2 years. Flywheel diameter, 6 feet. Speed, 160 R.P.M. Also 20 feet of 3-inch shafting, with 3 hangers, 1 clutch, and pulleys. Complete F.O.B. Dayton. $875.

Address, "ERA ENGINE,"

1619-2 Care this Journal.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or MICHIGAN AMMONIA WORKS, Detroit, Mich.

GREENPOINT

O·X·I·D·E

IS RELIABLE.

We quote "delivered" prices. May we not send you a sample?

Greenpoint Chemical Works, Brooklyn, N. Y.

Do You Wish to Know

what size of pipe to use to convey any quantity of gas, any distance, with any loss of pressure and any initial or final pressure? Then use

Cox's Gas Flow Computer,

as it gives this information accurately at sight, without mental effort. No calculations needed. Saves time, money and mistakes.

Price, 6.5 x 8 inches, in cloth case, $2.50. For sale by

A. M. Callender & Co., 42 Pine St., N. Y.

(*Concluded from page* 1116.)

INCLINED RETORTS.

Adam Weber Sons (Graham-Morton [England] System) 1132
Baltimore Retort and Firebrick Co., Baltimore, Md 1132
Fred. Bredel Co., Milwaukee, Wis..... 1134
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 1133
St. Louis Gas Construction Co., St. Louis, Mo..... 1132

VERTICAL S'S.

Adam Weber Sons, New York City..... 1132
Connelly Iron Sponge & Gov. Co. (Drake's [Eng.] System) 1133
Fred. Bredel Co., Milwaukee, Wis..... 1134
Parker-Russell Mining and Mfg. Co., St. Louis, Mo,.... 1133
St. Louis Gas Construction Co., St. Louis, Mo..... 1132

VERTICAL RETORTS, CHARGING AND DISCHARGING VERTICALLY.

Adam Weber Sons, New York City..... 1132

REGENERATIVE FURNACES.

Adam Weber Sons, New York City..... 1132
Baltimore Retort and Firebrick Co., Baltimore, Md 1132
Bartlett, Hayward & Co., Baltimore, Md..... 1137
Fred. Bredel Co., Milwaukee, Wis..... 1134
J. H. Gautier & Co., Jersey City, N. J 1132
Laclede Firebrick Mfg. Co., St. Louis, Mo..... 1120
Missouri Firebrick Co., St. Louis, Mo..... 1132
Parker-Russell Mining and Mfg. Co., St Louis, Mo. ... 1133
St. Louis Gas Construction Co., St. Louis, Mo..... 1132

SELF-SEALING MOUTHPIECE DOORS.

Continental Iron Works, Brooklyn, N. Y. 1140
Davis & Farnum Mfg Co., Waltham, Mass..... 1136
Fred. Bredel Co., Milwaukee, Wis..... 1134
Isbell-Porter Co., Newark, N. J..... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
Logan Iron Works, Brooklyn, N. Y..... 1140
R. D. Wood & Co., Philadelphia, Pa..... 1138
Stacey Mfg. Co., Cincinnati, O..... 1139
The Gas Machinery Co., Cleveland, O..... 1120
Western Gas Construction Co., Fort Wayne, Ind..... 1144

CHIMNEY CONSTRUCTION.

Adam Weber Sons, New York City..... 1132

INCANDESCENT GAS LAMPS.

D. M. Steward Mfg. Co., Chattanooga, Tenn..... 1078
General Gas Light Co., Kalamazoo, Mich..... 1121
Geo. G. Ramsdell, New York City..... 942
Welsbach Company, Gloucester, N. J..... 1120

BURNERS.

D. M. Steward Mfg. Co., Chattanooga, Tenn..... 1078
Wm. M. Crane Co., New York City..... 1122

LAVA GAS TIPS.

D. M. Steward Mfg. Co., Chattanooga, Tenn..... 1078

STREET LAMPS.

Thos. T. W. Miner, New York City..... 1128
Welsbach Street Lighting Co., New York and Phila ..1120

PURIFIERS.

Connelly Iron Sponge & Governor Co., New York City..1133
Cruse-Kemper Co., Philadelphia, Pa..... 1124
Davis & Farnum Mfg. Co., Waltham, Mass..... 1136
Fred. Bredel Co., Milwaukee, Wis. 1134
Isbell-Porter Co., Newark, N. J..... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
R. D. Wood & Co., Philadelphia, Pa..... 1140
Stacey Mfg. Co., Cincinnati, O..... 1139
Western Gas Construction Co., Fort Wayne, Ind. 1144

PURIFYING MATERIALS.

Connelly Iron Sponge & Governor Co., New York City..1133
Greenpoint Chemical Works, Brooklyn, N. Y..... 1116

VALVES.

Continental Iron Works, Brooklyn, N. Y..... 1138
Davis & Farnum Mfg. Co., Waltham, Mass..... 1138
Economical Gas Apparatus Construc'n Co, Toronto, Ont 1117
Isbell Porter Co., Newark, N. J..... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
Ludlow Valve Manufacturing Co., Troy, N. Y..... 1125
R. D. Wood & Co., Philadelphia, Pa..... 1140
Stacey Mfg. Co., Cincinnati, O..... 1139
The P. H. & F. M. Roots Co., Connersville, Ind..... 1127
Western Gas Construction Co., Fort Wayne, Ind. 1144

EXHAUSTERS.

Connelly Iron Sponge & Governor Co., New York City..1133
Connersville Blower Co., Connersville, Ind 1118
Davis & Farnum Mfg. Co., Waltham, Mass..... 1136
Isbell-Porter Company, Newark, N. J..... 1124
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
The P. H. & F. M. Roots Co., Connersville, Ind..... 1127

PURIFIER SCREENS.

John Cabot, Hoboken, N. J..... 1120
Western Gas Construction Co., Fort Wayne, Ind..... 1144

GAS STOVES.

American Meter Co., New York and Philadelphia..... 1143
Keystone Meter Co., Royersford, Pa..... 1142
Maryland Meter & Manufacturing Co., Baltimore, Md. 1141
Nathaniel Tufts Meter Co., Boston, Mass..... 1142

HOT WATER HEATERS.

Humphrey Co., Kalamazoo, Mich..... 1113

GASHOLDER TANKS.

J. P. Whittier, Brooklyn, N. Y..... 1128

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md..... 1137
Continental Iron Works, Brooklyn, N. Y..... 1138
Cruse-Kemper Co., Philadelphia, Pa..... 1124
Davis & Farnum Mfg. Co., Waltham, Mass..... 1136
Deily & Fowler, Philadelphia, Pa..... 1140
Economical Gas Apparatus Construc'n Co., Toronto, Ont 1117
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
Logan Iron Works, Brooklyn, N. Y..... 1140
R. D. Wood & Co., Philadelphia, Pa..... 1138
Riter-Conley Mfg. Co., Pittsburgh, Pa..... 1139
Stacey Mfg Co, Cincinnati, O..... 1139
Western Gas Construction Co., Fort Wayne, Ind..... 1144

STORAGE TANKS.

Davis & Farnum Mfg. Co., Waltham, Mass..... 1136
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1136
Stacey Mfg Co., Cincinnati, O..... 1139
Western Gas Construction Co., Fort Wayne, Ind 1144

PAINTS.

American Standard Composition Co., New York City. 1123

PATENTS, TRADE-MARKS, COPYRIGHTS.

Royal E. Burnham, Washington, D. C. 1120

THE ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED,

Consulting Engineers.

Builders of UP-TO-DATE Machinery and Appliances for Coal and Water Gas Plants. :: :: :: :: ::

PLANS, SPECIFICATIONS AND ESTIMATES PREPARED.

AMERICAN OFFICE:
269 Front St., East, Toronto, Canada.

ARTHUR E. BOARDMAN, C.E.,

For several years associated with the late CAPTAIN WILLIAM HENRY WHITE,

WILL CONTINUE THE BUSINESS OF

CONSULTING ENGINEER

For Gas, Water and Electric Light Companies, at
No. 41 Wall Street, Room 1707, New York.
TELEPHONE, 3534 BROAD.

New Business Methods, for 1907,

WILL contain more of valuable new business information than possible from any previous publication or other known medium. Because the Managers now see the utility of the book and three are contributing this year where one last year. The contributors know that the Editor has no time to compile this information.

The 1907 volume will present the experiences of more than 400 Managers, pictures of a hundred model appliance sales rooms and gas company offices, and thousands of examples of good advertising literature.

YOUR participation in this 500-page clearing house for new business methods is earnestly solicited.

Commence NOW to forward cards, booklets, circular letters, newspaper copy, photo's or descriptions of successful methods, to

GEORGE WILLIAMS, Madison, Wis.

THE GAS ENGINEER'S LABORATORY HANDBOOK,

By JOHN HORNBY, F.I.C.

PRICE, - - - - - - - $2.50.

For Sale by

A. M. CALLENDER & CO., No. 42 Pine Street, New York City.

WHY DO GAS EXHAUSTERS

AND HIGH PRESSURE GAS PUMPS BUILT BY

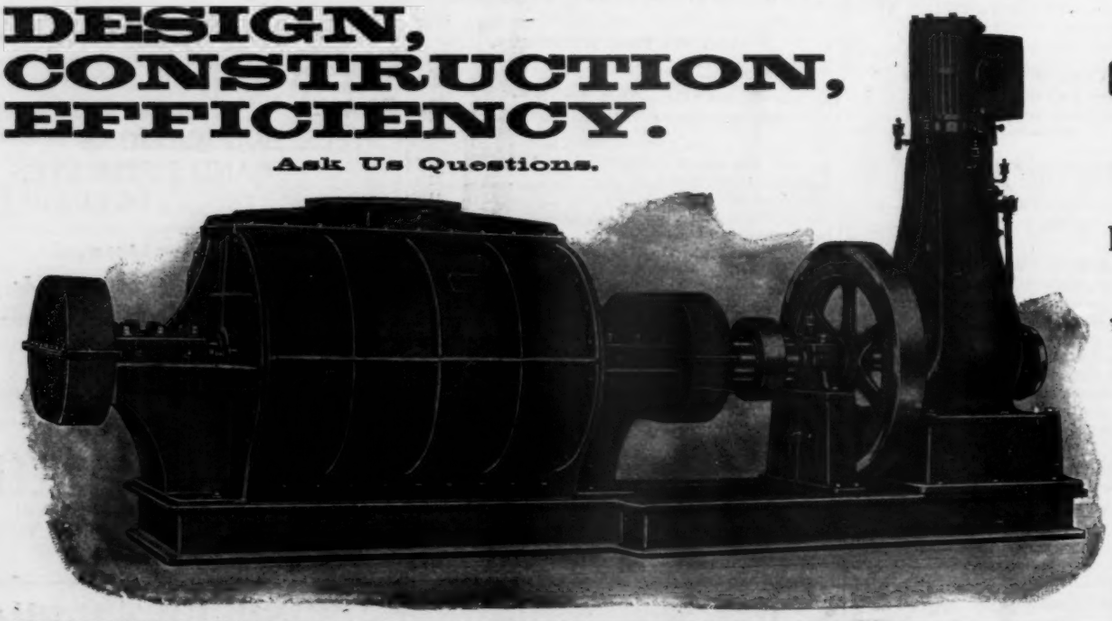
THE CONNERSVILLE BLOWER CO.

Stand so High in the estimation of those using them?

THE ANSWER IS IN THREE WORDS:

DESIGN, CONSTRUCTION, EFFICIENCY.

Ask Us Questions.



Home Office:
CONNERSVILLE, IND.

Eastern Sales Agent:
HORACE G. COOKE,
95 Liberty Street, New York City.

Write us about our Improved Stuffing Boxes.

Something Entirely New.

SCIENTIFIC BOOKS.

MODERN APPLIANCES IN GAS MANUFACTURE. By Fletcher W. Stevenson. $2.

MODERN GAS ENGINES AND PRODUCER GAS PLANTS. By R. E. Mathot. $2.50.

COAL TAR AND AMMONIA. By George Lunge. $15.

ELECTRIC GAS LIGHTING. By H. S. Norrie. 50 cents.

GAS ANALYST'S MANUAL. By J. Abady. $6.50.

COX'S GAS FLOW COMPUTER. $2.50.

GAS ENGINE DESIGN. By Charles Edward Lucke, Ph.D. $3.

THE "GAS WORLD" YEAR BOOK, 1906. Edited by John Douglas. $3.

GAS AND GAS WORKS. By Hughes and O'Connor. $2.50

POOLE ON FUELS. By Herman Poole. $3.

GAS ENGINEER'S POCKET-BOOK. By Henry O'Connor $3.50.

TECHNICAL GAS ANALYSIS. By Winkler & Lunge. $4.

GAS CONSUMER'S HANDYBOOK, by Wm. Richards. 20 cents.

PRACTICAL TREATISE ON HEAT. By Thomas Box. 2d edition. $5.

PRACTICAL PHOTOMETRY: A Guide to the Study of the Measurement of Light. By W. J. Dibdin. $3.

CHEMICAL TECHNOLOGY: Vol. I., *Fuel and Its Applications*, $5. Vol. II., *Lighting*, $4.

IRONWORK: Practical Designing of Structural Ironwork. By H. Adams. $3.50.

SELF-INSTRUCTION FOR STUDENTS IN GAS MANUFACTURE. Elementary, advanced and constructional, each, $1.50.

LIQUID FUEL FOR MECHANICAL AND INDUSTRIAL PURPOSES. By E. A. Brayley Hodgetts. $2.50.

HEMPEL'S GAS ANALYSIS, $2.25.

HANDBOOK FOR GAS ENGINEERS AND MANAGERS. Seventh edition. By Thomas Newbigging $6.50.

GAS, GASOLINE AND OIL ENGINES. By Gardner D. Hiscox. Fifteenth edition. $3.50.

PRACTICAL HANDBOOK ON GAS ENGINES, by G. Lieckfeld. $1.

HEAT A MODE OF MOTION. By John Tyndall. $2.50.

THEORY OF HEAT. By J. Clerk-Maxwell. $1.50.

MANUAL FOR GAS ENGINEERING STUDENTS. By D. Lee. 40 cents.

AMMONIA AND AMMONIUM COMPOUNDS. By Dr. R. Arnold. $2.

A TREATISE ON THE COMPARATIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS. By D. A. Graham. $3.

A TEXT BOOK OF INORGANIC CHEMISTRY. By Prof. Victor Von Richter. $2.

ILLUMINATING AND HEATING GAS. By W. Burns. $1.50

HANDBOOK FOR MECHANICAL ENGINEERS. By H. Adams. $2.50.

GAS ENGINEER'S LABORATORY HANDBOOK. By Jno. Hornby. $2.50.

FINANCES OF GAS, ELECTRIC LIGHT AND POWER ENTERPRISES. By Wm. D. Marks. $2.50.

STANDARD REDUCTION FACTORS FOR GASES. By Helon Brooks MacFarland. $1.50.

PRACTICAL PLUMBING. By P. J. Davies. Vol. I. $3, Vol. II. $4.50.

AMERICAN SANITARY PLUMBING. By James J. Lawler. $2.

TREATISE ON MASONRY CONSTRUCTION. Baker. $5.

FIELD'S ANALYSIS, 1905. $5.

A COMPARISON BETWEEN THE ENGLISH AND FRENCH METHODS OF ASCERTAINING THE ILLUMINATING POWER OF COAL GAS. $1.60.

ELECTRICITY.

ELECTRIC WIRING DIAGRAMS AND SWITCHBOARDS By Newton Harrison, E.E. $1.50.

CARE AND MANAGEMENT OF ELECTRIC POWER PLANTS. By Norman H. Schneider. Cloth, $1.50. Leather, $2.50.

INDUSTRIAL PHOTOMETRY, with Special Application of Electric Lighting. By A. Palaz, Sc.D. $4.

ELEMENTS OF ELECTRIC LIGHTING, Including Electric Generation, Measurement, Storage and Distribution. By Philip Atkinson. $1.50.

ELECTRIC TRANSMISSION OF ENERGY. By G. Kapp. $3.50.

ELECTRICIAN'S POCKET-BOOK. By Monroe and Jamieson. $2.50.

DYNAMO BUILDING. By F. W. Walker. 50 cents.

DOMESTIC ELECTRICITY FOR AMATEURS. By E. Hospitalier. $2.50.

PRACTICAL MANAGEMENT OF DYNAMOS AND MOTORS. $1.

PRACTICAL GUIDE TO THE TESTING OF INSULATED WIRES AND CABLES. $1.

ELECTRIC LIGHTING, by Francis B. Crocker. $3.

ELECTRIC LIGHT FITTING. $2.

PRACTICAL ELECTRICITY. $2.50.

ELECTRICITY FOR ENGINEERS. $2.50.

ELECTRICITY, Its Theory, Sources and Applications. By John T. Sprague. $6.

The above will be forwarded upon receipt of price. If sent by mail or express, postage or express charges must be added to above prices. We take especial pains in securing and forwarding any other Works that may be desired, upon receipt of order. All remittances should be made by check, draft, or post office money order. No books sent C.O.D.

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

DIRECTORS:

THOMAS G. MARSH, M. E.,
Chairman, the Rotary Meter Company, Ltd.
Manchester, England.

HENRY L. DOHERTY,
Henry L. Doherty & Co.,
New York.

Dr. F. SCHNIEWIND, Vice-Pres and Gen. Mgr.,
United Coke and Gas Company,
New York City.

IRA C. COPLEY, President,
Western United Gas and Electric Company,
Aurora, Ill.

GEO. D. ROPER, President,
Eclipse Gas Stove Company,
Rockford, Ill.

FREDERICK H. SHELTON,
Engineer and Secretary various Gas Companies,
Philadelphia, Pa.

E. C. BROWN, President of the Company.

ROTARY STATION METER

A Few of the 300 Users of these Meters.

Name of Company.	Hourly Capacity.	To Measure.
Accrington Dist. Gas Board	30,000	Carburetted Water Gas.
Amsterdam Gas Works, Holland	30,000	Coal Gas Make.
British Gas Light Co., Norwich	3,500	Oxide Revivification.
" " " " Etruria	30,000	General Works Meter.
" " " " Hull	1,500	Oxide Revivification.
Cleckheaton Gas Co	30,000	General Works Meter.
Cleethorpes Gas Co	25,000	Water Gas Make.
Croyden Commercial Gas and Coke Co	3,500	Oxide Revivification.
" " " "	80,000	Carburetted Water Gas.
" " will install	180,000	General Works Meter.
Danish Gas Works, Fredriksburg, Denmark	100,000	Coal Gas Make.
Elstev Gasmeterfabric, Rotterdam, Holland	2,800	For Testing Meters.
Gas Light and Coke Co., London	5,000	Oxide Revivification.
" " "	3,500	" "
" " "	3,500	" "
Gas Anstalt, Hanover, Germany	100,000	General Works Meter.
Halifax Corporation	100,000	Carburetted Water Gas.
Hastings and St. Leonards Gas Co	100,000	General Works Meter.
Hanover Gas Works, Hanover, Germany	100,000	" " "
Kidderminster Gas Light and Coke Co	60,000	" " "
Liverpool United Gas Co	10,000	Oxide Revivification.
Shanghai Gas Co	40,000	Carburetted Water Gas.
" "	75,000	Mixed Coal and Water Gas.
South Metropolitan Gas Co., London	5 each 10,000	Oxide Revivification.
South Staffordshire Gas Co	(70 with capacity from) 2,800 to 500,000	Producer Gas.
Stockholm Gas Co., Sweden	100,000	Mixed Coal and Water Gas.
Worthing Gas Light and Coke Co	60,000	General Works Meter.

We have been permitted by the recipients, an American constructing concern, to reproduce the following letters recently received in reply to inquiry respecting Rotary Station Meters made of three important English gas works' engineers, all of whom enjoy enviable reputations and are everywhere among their fellow workers recognized for the skill, ability and success which has attended their administrations of the properties with which they are connected. The originals of these letters, together with many more of similar tenor, are on file in our office and open to the inspection of any prospective purchaser of Rotary Station Meters.

DEAR SIRS:

In answer to yours of the 27th March, I have pleasure in stating that we have had an 80,000 cu. ft. per hour Rotary Station Meter in use in connection with our Water Gas Plant for almost 18 months; during the greater part of this time we worked in series with our ordinary station meter, and found its registration accurate. I am so satisfied with it that I am about to place an order with the firm for a meter to pass 180,000 cu. ft. per hour of coal gas.

Yours faithfully,

DEAR SIRS:

In reply to your enquiry of the 27th March *re* Rotary Meter, I have not the slightest hesitation in stating that the meter we have in use here is giving every satisfaction.

It is 15,000 cu. ft. per hour and fixed at the outlet of Condensers of our Carburetted Water Gas Plant, and of course in the inlet of the Relief Holder, and is working under extreme conditions.

It is fixed underground, and since we have had it, *viz.*, 3 years, we have only taken it out once for examination (and this out of curiosity); as you will quite understand, there is a lot of oil, tar, etc., in contact with the meter at this point, and we thought it might be getting clogged up, but were pleased to find that such was not the case.

From our experience we have not the slightest hesitation in recommending its adoption to all gas makers.

I shall be pleased to reply further if necessary.

Yours very faithfully,

GENTLEMEN:

In reply to yours of March 27th respecting the Rotary Station Meter in use at these Works, I beg to inform you that the same has given every satisfaction. The meter has been registering the whole of the gas made at our Inclined Retort Section for the past 2½ years, and up to the present time we have not had the slightest trouble. The capacity of our meter is 100,000 cu. ft. per hour.

Yours truly,

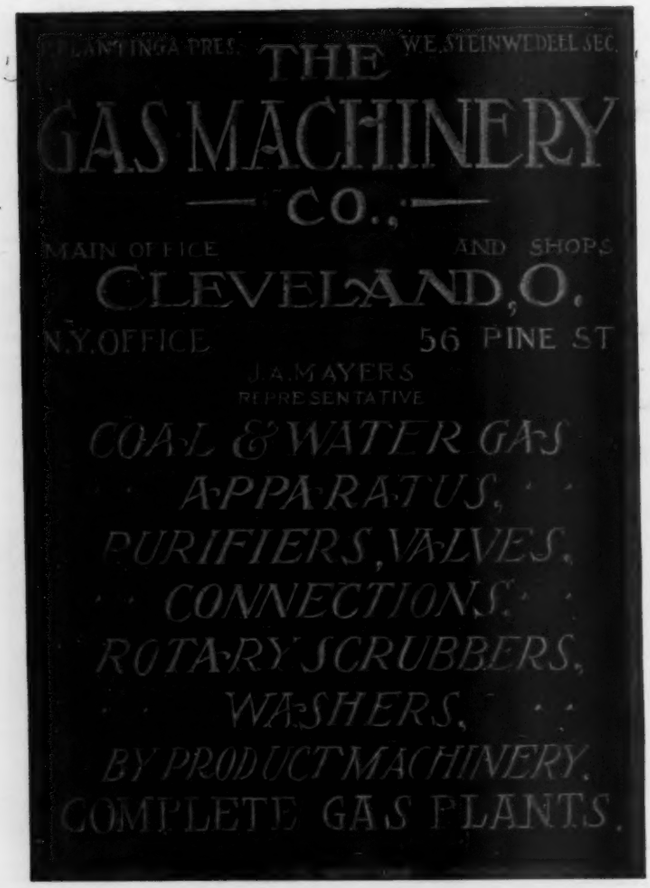
One-half the Cost—One-tenth the Space.

When in Need of Station Meters Write

ROTARY METER COMPANY,

Send for Catalogue.

280 Broadway, New York City.



PRACTICAL PHOTOMETRY,

By WILLIAM JOSEPH DIBDIN,

PRICE, $3. FOR SALE BY

A. M. CALLENDER & CO., 42 Pine Street, New York City.

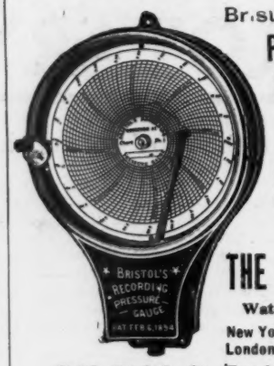
PATENTS, TRADE MARKS, COPYRIGHTS.

ROYAL E. BURNHAM,

Solicitor of Patents and Counsellor in Patent Causes.

833 Bond Building, Washington, D. C.

Send for Pamphlet on Patents.



Bristol's Recording

Pressure Gauge,

STANDARD FORM, NEW PORTABLE FORM,

For Continuous Records of

Street Gas Pressure.

Simple in Construction, Accurate in Operation and Low in Price.

Fully Guaranteed. Send for Catalog A.

THE BRISTOL CO.,

Waterbury, Conn., U.S.A.

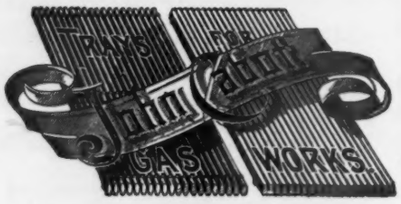
New York—114 Liberty Street,
London—23 College Hill.

Gold Medal, St. Louis Exposition.

Church's Patent Trays.

Reversible; Strongest; Most Easily Repaired.

Special Trays for Iron Sponge.



1412-1416 Adams Street, Hoboken, N. J.

We also Supply the Cheapest and Strongest

•Reversible Bolted Trays•

IN THE MARKET.

SEND FOR BOOKLET AND CIRCULARS.

THE BEST are THE CHEAPEST.

HOMOGENEOUS CONSTRUCTION ~ PERFECT FINISH ~ LONGEST CONTINUOUS LIFE.

WE HAVE RETORTS MAKING GAS TO-DAY THAT HAVE BEEN IN CONSTANT USE FOR 52 MONTHS.

Awarded the Only **GRAND PRIZES** At St. Louis Exposition

BY A JURY COMPOSED OF THE MOST COMPETENT ENGINEERS OF FOUR CONTINENTS, FOR SUPERIOR

RETORTS * GAS BENCHES * FIREBRICK.

Designs and Estimates Cheerfully Furnished.

LACLEDE FIREBRICK MANUFACTURING COMPANY,

ST. LOUIS, MO.

In Wa'ertown, N. Y.

In many cities evening shopping centers are created by the united efforts of neighboring merchants in grouping their

HUMPHREY

OUTDOOR LAMPS.

NEW YORK:
46 West Broadway.
OAKLAND, CAL.:
1119 Jefferson Street
(TEMPORARILY).

GENERAL GAS LIGHT CO.,
KALAMAZOO, MICH.

The "Gas World" Year Book, 1906,

Edited by JOHN DOUGLAS.

Technical Data, Diary and Handy Tables for Gas Engineers and Managers, Directory of English Gas Companies, Analyses of Accounts of Gas Undertakings, etc.

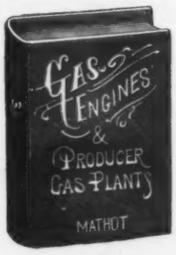
Price, $3. For Sale by

A. M. CALLENDER & CO., - 42 Pine Street, New York City.

MODERN GAS ENGINES and PRODUCER GAS PLANTS,

By R. E. MATHOT, M.E.,

Containing a Preface by DUGALD CLERK, F.C.S, indorsing the Book.



A PRACTICAL Treatise of 320 pages, Fully Illustrated by 175 Detail Illustrations, Setting Forth the Principles of Gas Engines and Producer-Design, the Selection and Installation of an Engine, Conditions of Perfect Operation, Producer Gas Engines and their Possibilities, the care of Gas Engines and Producer Gas Plants, with a Chapter on Volatile Hydrocarbons and Oil Engines.

PRICE, $2.50. For Sale by

A. M. CALLENDER & CO., - 42 Pine Street, New York City.

Bray's Union-Jet.

ASK ANY GAS COMPANY WHO USES BRAY BURNERS WHY THEY USE THEM,

And their answers would contain more reasons than would fill this page. Reduced to a few words it would be—

Because they are more durable. They reduce complaints, and they bring out the full value of the gas.

Could you ask for better reasons?

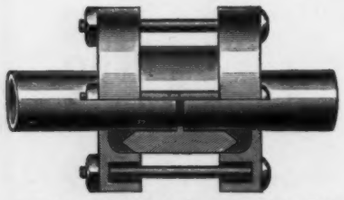
OUR BLUE BOOK WOULD INTEREST YOU. May we send it?

W. M. CRANE COMPANY,

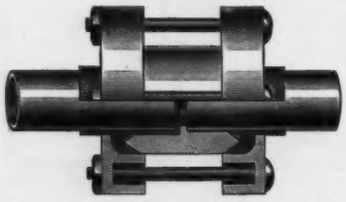
1131-33 Broadway, New York, N. Y.,

We make Gas Appliances of all kinds. SOLE AGENTS for BRAY BURNERS for the UNITED STATES and CANADA.

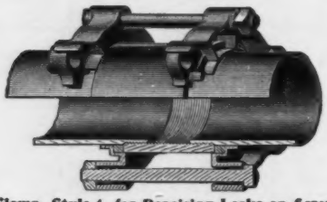
Self-Lighting Burner.



Regular Coupling, Style 1, for Plain End Wrought Iron Pipe.



Insulating Coupling, Style 5, for Plain End Wrought Iron Pipe,



Clamp, Style 4, for Repairing Leaks on Screw Collar.

Long Sleeve, Style 2, for Mending Broken Lines.

S. R. DRESSER MANUFACTURING CO.,

SUCCESSORS TO

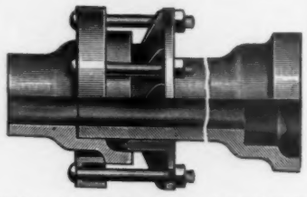
S. R. DRESSER,

BRADFORD, PA., U. S. A.,

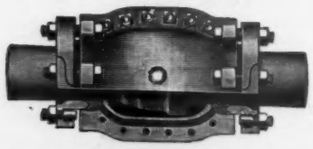
Patentee and Manufacturer of Specialties for Gas and Water Lines,

Pipe Couplings, Sleeves, Clamps, Crosses, Tees and Ells.

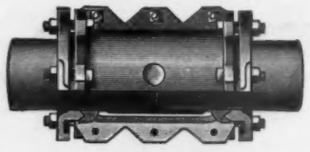
STATE REQUIREMENTS AND SEND FOR CATALOGUE.



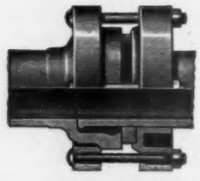
Coupling, Style 9, for Special Style Cast Iron Pipe.



Split Sleeve for Repairing Broken Bell on Cast Iron Pipe.



Split Sleeve for Repairing Broken or Cracked Cast Iron Pipe.



Clamp, Style 4½, for Repairing Leaky Lead or Cement Joints in Cast Iron Pipe.

MAIN AND SERVICE LAYING.

Gas and water companies about to lay new mains or services will find it useful to communicate with us. Our gangs are experienced and our plant is completely equipped for street main and service laying in all branches. These are our specialties. We are in a position to quote prices which will attract the attention of the economical manager.

Gas Company References. Correspondence Solicited.

Telephone, 302 Flushing. SULLIVAN BROS., Flushing, N. Y.

ELECTRIC GAS LIGHTING.

How to install electric gas igniting apparatus, including the jump spark and multiple systems for use in houses, churches, theaters, halls, schools, stores or any large building. Also, the care and selection of suitable batteries, wiring and repairs.

By H. S. NORRIE.

Price, 50 cents. Orders may be sent to

A. M. CALLENDER & CO., 42 PINE ST., N. Y. CITY.

PRACTICAL HANDBOOK ON GAS ENGINES, WITH INSTRUCTIONS FOR CARE AND WORKING OF THE SAME,

By G. LIECKFELD, C.E. Translated with Permission of the Author, by GEO. M. RICHMOND, M.E. Price, $1.00.

A. M. CALLENDER & CO., 42 PINE ST., NEW YORK CITY.

H. M. Byllesby & Company

(Incorporated),

GAS ENGINEERS,

DESIGN, CONSTRUCT AND OPERATE COMPLETE COAL, WATER AND CRUDE OIL GAS PLANTS.

HIGH AND LOW PRESSURE DISTRIBUTING SYSTEMS.

AMERICAN TRUST BUILDING,

CHICAGO.

THE AMERICAN STANDARD COMPOSITION CO.

—) MANUFACTURES (—

HEAT PROOF AND DAMP PROOF PAINTS

For Structural Iron and Steel, Gas Apparatus, Underground Piping, Boiler Fronts, Stacks, etc.

Our Paints will not crack, peel or scale. Heat does not affect them. They are moisture proof.

They are the Paints that Don't Come Off!

We let you Try before you Buy. Send for samples and prices.

AMERICAN STANDARD COMPOSITION COMPANY,

1707, Wall Street Exchange Building, New York.

FOR HOT BATHS,

And for every other Hot Water Need, use the

IMPROVED

HUMPHREY CRESCENT INSTANTANEOUS WATER HEATERS.

Efficient. Compact. Durable. Every Heater Guaranteed.

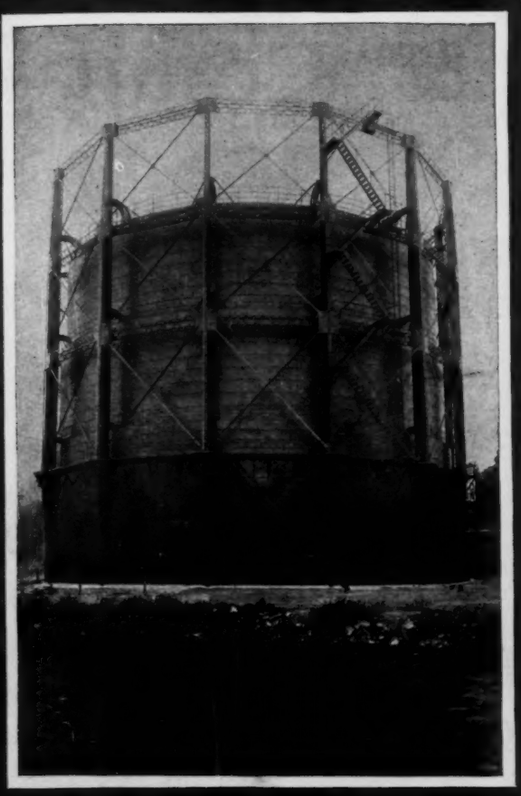
No. Heater.	Price.	Gas Supply from Meter.	Heats Gals. per Min. 50° in Temperature.	Height.	Diameter.	Shipping Weight.
Non-Contact 2	$40.00	¾ Inch.	2½	34⅝ Inches.	12 Inches.	70 Pounds.
" 1	34.00	¾ "	2	31 "	10¾ "	62 "
Contact 6	24.00	¾ "	3	29¼ "	12 "	60 "
" 8	23.50	½ "	2⅛	28¾ "	10¼ "	48 "
" 9	20.00	⅝ "	1	24 "	9¼ "	45 "

These prices include Safety Valves and Unions, one Bent Output Spout. For prices of fittings see our complete catalogue, "The Luxury of a Bath."

We will be glad to quote discounts.

HUMPHREY CO., · · · Kalamazoo, Mich.

The ONLY manufacturers in the world of a complete line of Instantaneous Water Heaters.



ARTHUR R. CRUSE
President

A. E. KEMPER
Treasurer

HENRY W. SCATTERGOOD
Vice-President

FRANK FLAVELL
Secretary

CRUSE-KEMPER COMPANY

PHILADELPHIA OFFICES
1205-6 Stephen Girard Building

WORKS
Ambler, Pa

Manufacturers of

TRIPLE
DOUBLE and
SINGLE-LIFT

Gas Holders

WITH OR WITHOUT
METAL TANKS

Oil and Water Tanks
Purifier Covers
General Plate Metal Work and
Steel Water Towers

PLANS, SPECIFICATIONS AND ESTIMATES
PROMPTLY FURNISHED ON REQUEST

J. S. DeHART, JR.,
PRESIDENT

A. F. WEHNER,
SECRETARY

R. K. WEHNER,
TREASURER

ISBELL-PORTER COMPANY

GAS ENGINEERS & BUILDERS OF GAS WORKS

BENCH WORK

CHARGING AND
DISCHARGING
MACHINERY

MACKENZIE
EXHAUSTERS

PRIMARY AND
SECONDARY
CONDENSERS
FOR FRESH
OR SALT WATER

ISBELL VALVES
SPECIALS

TAR
EXTRACTORS

P.&A. TAR EXTRACTORS
FOR WATER GAS

ROTARY AMMONIA
SCRUBBERS

SHAVING
SCRUBBERS
PURIFIERS
STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N.J.
ESTABLISHED 1865

EMPIRE GAS IMPROVEMENT AND CONSTRUCTION CO.,

Contractors for the Installation of

COMPLETE GAS WORKS OR ANY PART THEREOF, INCLUDING

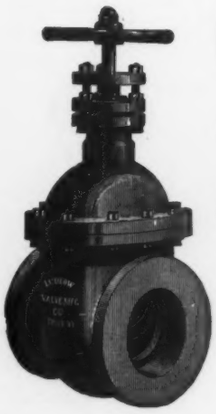
Houses, specially designed for room and economy.
Holders of any desired capacity, with or without Steel Tank.
Coal Gas Benches of every approved setting.

Standard Lowe Double Superheater Water Gas Sets.
Lowe-Sutherland Double Superheater Water Gas Sets.

Boilers, Engines, Blowers, Coal Elevators, Purifying Boxes, Tar Extractors, Scrubbers, Condensers, Exhausters, Station Meters, Street Mains and Governors.

Where necessary we give Bond in any required sum to guarantee speedy *completion* and *results.*

EMPIRE GAS IMPROVEMENT AND CONSTRUCTION CO., 49 Wall St., New York.



THE

Ludlow Valve Mfg. Co.,

TROY, N. Y., U. S. A.

Double and Single Gate Valves, ¼" to 72",

—FOR—

Gas, Water, Steam, Oil, Ammonia, Etc.

HOT GAS VALVES A SPECIALTY.

Send for Catalogue.

Link-Belt Open Top Carrier

Handles coal, coke, ashes, etc., without transfer or breakage. It is strong and durable, and adaptable to many difficult conditions.

THE LINK-BELT ENGINEERING CO.,
PHILADELPHIA.

NEW YORK: 299 Broadway St. *PITTSBURGH:* Park Bldg. *CHICAGO:* The Link-Belt Machinery Co.

J. F. W. JOST,

CHEMICAL ENGINEER

—IN—

GAS MANUFACTURE,

P. O. BOX 2043, PHILADELPHIA, PA.

The Gas Engineer's Laboratory Handbook,

By JOHN HORNBY, F.I.C.

Price, $3.50.

A. M. CALLENDER & CO., 42 Pine St., N. Y. City.

THE HUNT STEAM SHOVEL.
Greatest filling power of any other style of shovel.
Stock sizes: ½, 1 and 2-ton capacity.

C. W. HUNT COMPANY,
West New Brighton, N. Y.

THE

Valuation of Gas, Electricity and Water Works

FOR ASSESSMENT PURPOSES.

THOS. NEWBIGGING, M.Inst.C.E., and WM. NEWBIGGING, Assoc.M.Inst.C.E.

With an Appendix of Decided Cases.

Second Edition. Price $2. For Sale by

A. M. CALLENDER & CO., 42 Pine Street, N. Y. City.

Cox's High Pressure Fluid Discharge Computer.

This Computer solves the following formula, which is applicable to Gas, Air and other elastic fluids, flowing through long pipes with high initial pressures:

Discharge in cubic feet per hour at atmospheric pressure $= 33.3 \sqrt{\frac{d^5 \times (p_1^2 - p_2^2)}{L \times w}}$

Where

d = diameter of pipe in inches,
p_1 = absolute initial pressure in pounds per square inch,
p_2 = absolute terminal pressure in pounds per square inch,
L = length of pipe in miles,
w = specific gravity of the fluid when air = 1.

To Find the Discharge from a Pipe and the Required Size of Pipe.

(1.) Set the specific gravity of the fluid opposite the length of pipe;

(2.) Bring the DIFFERENCE of the initial and terminal gauge pressures opposite the SUM of the initial and terminal gauge pressures;

(3.) Opposite any diameter of pipe will now be found the discharge in cubic feet per hour at atmospheric pressure; and

(4.) Opposite any desired discharge will also be found the required diameter of pipe.

Price of the Computers, in Cloth Case, 6½ x 8 inches, $5 Each, Net.

For Sale by

A. M. CALLENDER & CO., 42 Pine Street, New York City.

INTENSIVE SCRUBBERS.

TOWER TYPE.
TRIPLE EFFICIENCY.

Western Sales Agent
BARTLETT, HAYWARD & CO., Baltimore, Md.

LLOYD CONSTRUCTION CO., Detroit, Mich.

C—1028.

Mueller Pipe Jointers.

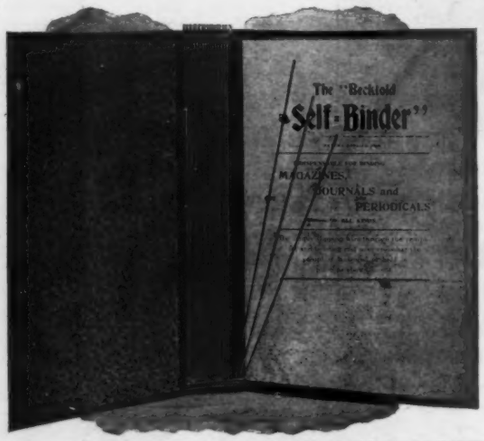
No inconvenience in your pipe line work on account of a lost or mislaid jointer clamp if you use Mueller Pipe Jointers; the clamp is permanently hinged on for the purpose of saving you this sort of inconvenience.

THE MARK OF UNCONDITIONAL DECATUR H⊙M ILL. U.S.A. GUARANTEE MUELLER GOODS

H. MUELLER MFG. CO.,

Decatur, Ill., U. S. A. New York, N. Y., U. S. A.

BINDER
FOR THE
JOURNAL.

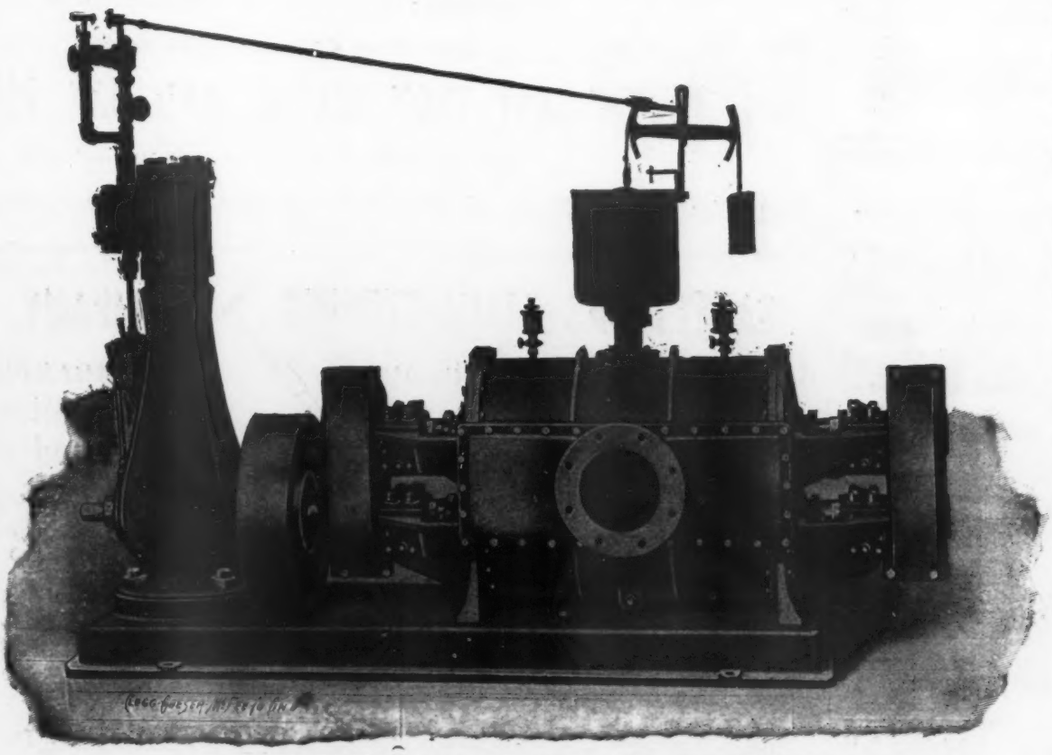


PRICE, $1.

FOR SALE BY

A. M. CALLENDER & CO., - 42 Pine St., New York.

ROOTS' GAS EXHAUSTERS.



GOLD MEDAL AT ST. LOUIS, 1904.

Sizes for any required capacity.

Self-oiling, adjustable bronze bearings.

Most perfect and sensitive Governor.

Write for Catalogue.

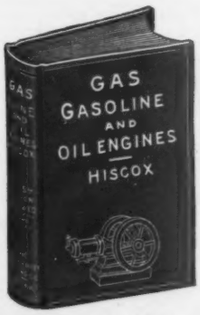
P. H. & F. M. ROOTS COMPANY,

HOME OFFICE:
Connersville, Ind.

NEW YORK OFFICE:
120-122 Liberty St.

CHICAGO OFFICE:
1547 Marquette Bldg.

JUST PUBLISHED, 15TH EDITION, REVISED, ENLARGED AND RESET.



Gas, Gasoline and Oil Engines,

INCLUDING GAS PRODUCER PLANTS,

By GARDNER D. HISCOX, M.E.,

Author of "MECHANICAL MOVEMENTS," "COMPRESSED AIR," Etc.

PRICE, - - - - - $2.50.

The only complete American book on the subject for Gas Engine Owners, Gas Engineers and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene and crude petroleum engines.

The new rewritten, enlarged and revised 15th edition of this work has been prepared to meet the increasing demand for a thorough treatise on the subject. Its 450 pages give general information for everyone interested in this popular motive power and its adaptation to the increasing demand for a cheap and easily managed motor requiring no licensed engineer. It is fully illustrated by 351 Engravings and Diagrams. For sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

Gas Companies' Bookkeeping,

1906 EDITION,

By JOHN H. BREARLEY and BENJAMIN TAYLOR.

A Practical Treatise on the Keeping of Gas Companies' Accounts,

WITH USEFUL

FORMS FOR GAS UNDERTAKINGS.

PRICE, CLOTH, $4.50, MOROCCO, $6.50.

FOR SALE BY

A. M. CALLENDER & CO., - - - 42 Pine Street, New York City.

GEORGE ORMROD, Mangr. & Treas., Emaus, Pa.
JOHN DONALDSON, Prest., Betz Bldg., Phila., Pa.

EMAUS PIPE FOUNDRY.

DONALDSON IRON COMPANY. EMAUS, PA.

MANUFACTURERS OF

CAST IRON PIPE AND SPECIAL CASTINGS

FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

GAS TAPPING MACHINES

—FOR—

Drilling and Tapping Pipe under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

Geo. Light,
DAYTON, O.

"THE MINER"

Globe Street and Boulevard Lamps.

Cheapest and Best

THOUSANDS IN USE WITH INCANDESCENT BURNERS.

Send for Catalogues.

THOMAS T. W. MINER,

821-823 Eagle Av., N.Y.

GASHOLDER TANKS AND GAS WORKS MASONRY COMPLETE.

Plans prepared and Estimates furnished at short notice.

J. P. WHITTIER.
238 Java Street, Brooklyn, N. Y.

Practical Handbook on

GAS ENGINES,

With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.

Translated with Permission of the Author,
By GEO. M. RICHMOND, M.E.

Price, $1. For Sale by
A. M. CALLENDER & CO.,
No. 42 Pine Street, New York City.

Gas Engineer's Pocket-book, —BY— HENRY O'CONNOR,

Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works. PRICE, $3.50. For Sale by
A. M. CALLENDER & CO., 42 Pine St., N.Y. City.

WARREN FOUNDRY AND MACHINE CO.,

Established 1856. Works at Phillipsburgh, N. J.

New York Office, 160 Broadway.

CAST IRON WATER AND GAS PIPE,

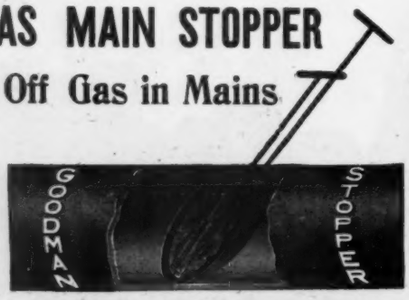
FROM THREE TO FORTY-EIGHT INCHES DIAMETER. ALSO, ALL SIZES OF

Flange Pipe for Sugar House and Mine Work. Branches, Bends, Retorts, etc., etc.

SAFETY GAS MAIN STOPPER COMPANY,

For Shutting Off Gas in Mains

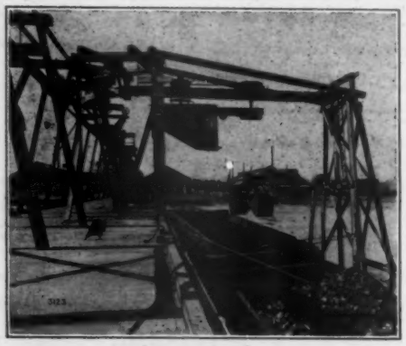
Any size gas main can be shut off in 30 seconds. : : :



Temporarily during alterations and repairs. : : : :

STOPPERS SENT ON TRIAL.

Address: SAFETY GAS MAIN STOPPER CO., 552 E. 135th St., New York City.



All kinds of material can be transported by Telpherage.

Coal Telpherage.

To unload a barge or boat quickly this is the best method devised and employed. Electric hoist has a capacity of 5,000 lbs. at 150 ft. a minute; the travelling speed is 1,000 ft. a minute. Total length of line shown in illustration—machine installed for the Philadelphia Quartz Co., Chester, Pa., for handling coal, sand, etc.—is 1,000 ft., three switches permit transfer to different parts of the plant.

UNITED TELPHERAGE DEPARTMENT
The Dodge Coal Storage Co.

Philadelphia—Hunting Park ave. and P. & R. Ry.
New York—49 Dey street.
Boston—164 Federal street.
Chicago—39th street and Stewart avenue.
Pittsburgh—1501-2 Park Building.
Portland, Ore.—309 McKay Building.

Chollar's System of Gas Purification.

THE PURIFIED GAS REVIVES THE FOULED OXIDE.

Four Roll Troughing Idler
FOR WIDE BELTS.
The positions of the rolls conform to a natural and uniform curve of the belt.

BELT CONVEYORS

EQUIPPED WITH

BALL BEARING ROLLS

Possess greater efficiency, consume less power, and the belts last much longer than when any other type of roll is employed.

Permit us to tel you why and to submit plans and estimates.

The Link-Belt Machinery Co.
Link-Belt Engineering Co
Philadelphia Chicago U.S.A.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

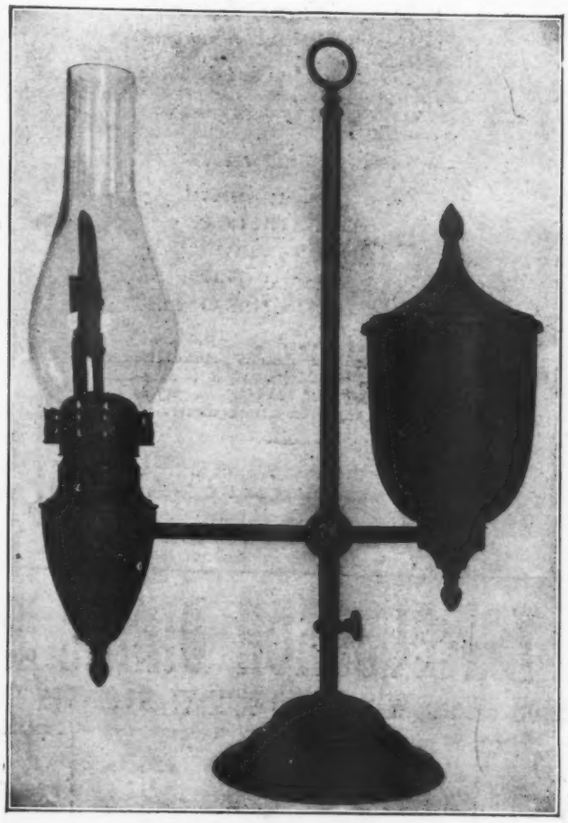
JULY, 1906.

Day of Week.	Table No. 1. Following the Moon. Date.	Light.	Extinguish.
Sun.	1	12.40 AM	3.40 AM
Mon.	2	1.20	3.40
Tue.	3	2.10	3.40
Wed.	4	No L.	No L.
Thu.	5	No L. FM	No L.
Fri.	6	No L.	No L.
Sat.	7	8.00 PM	9.50 PM
Sun.	8	8.00	10.30
Mon.	9	8.00	11.10
Tue.	10	8.00	11.40
Wed.	11	8.00	12.10 AM
Thu.	12	8.00 LQ	12.40
Fri.	13	8.00	1.10
Sat.	14	8.00	1.40
Sun.	15	8.00	2.10
Mon.	16	8.00	2.40
Tue.	17	8.00	3.20
Wed.	18	8.00	3.50
Thu.	19	8.00	3.50
Fri.	20	8.00	3.50
Sat.	21	8.00 NM	3.50
Sun.	22	7.50	3.50
Mon.	23	7.50	3.50
Tue.	24	7.50	3.50
Wed.	25	7.50	3.50
Thu.	26	9.30	3.50
Fri.	27	10.00	3.50
Sat.	28	10.40 FQ	3.50
Sun.	29	11.20	4.00
Mon.	30	12.00	4.00
Tue.	31	12.50 AM	4.00

TOTAL HOURS DURING 1906.

By Table No. 1.

	Hrs.Min.
January	223.40
February	190.40
March	192.10
April	167.00
May	152.20
June	142.10
July	150.20
August	157.40
September	170.00
October	185.10
November	201.40
December	214.00
Total, yr.	2146.50



THE ELLIOTT KEROSENE STANDARD PHOTOMETER LAMP.

***

10-Candle Power.

***

This lamp is a perfect substitute for the 10-candle Pentane Lamp hitherto used, and has the following advantages:

1st. It uses Standard Kerosene Oil (Pratt's Astral Oil or equivalent).

2d. It is remarkably steady. Will burn 24 hours continuously with less than 2 per cent. variation.

3d. It is much less dangerous than Pentane, which is a kind of gasolene.

4th. It is not easily affected by air currents in the photometer room.

5th. Since the lamp may burn continuously, the candle power of gas may be taken at any moment, if necessary. This insures steady illuminating power without waste of carburetting material.

6th. The first cost of the lamp brings it within the reach of even small gas works.

7th. Costs much less to maintain than a Pentane lamp or sperm candles doing the same service.

8th. Is not affected by the weather.

PUBLIC LIGHTING TABLE.

JULY, 1906.

Day of Week.	Table No. 2. New York City. All Night Lighting. Date.	Light	Extinguish.
		P. M.	A.M.
Sun.	1	7.30	3.15
Mon.	2	7.30	3.15
Tue.	3	7.30	3.15
Wed.	4	7.30	3.15
Thu.	5	7.30	3.15
Fri.	6	7.30	3.15
Sat.	7	7.30	3.15
Sun.	8	7.30	3.15
Mon.	9	7.30	3.15
Tue.	10	7.30	3.15
Wed.	11	7.30	3.15
Thu.	12	7.30	3.15
Fri.	13	7.30	3.15
Sat.	14	7.30	3.15
Sun.	15	7.30	3.15
Mon.	16	7.20	3.15
Tue.	17	7.20	3.15
Wed.	18	7.20	3.15
Thu.	19	7.20	3.15
Fri.	20	7.20	3.15
Sat.	21	7.20	3.15
Sun.	22	7.20	3.15
Mon.	23	7.20	3.15
Tue.	24	7.20	3.15
Wed.	25	7.20	3.15
Thu.	26	7.20	3.15
Fri.	27	7.20	3.15
Sat.	28	7.20	3.15
Sun.	29	7.20	3.15
Mon.	30	7.10	3.30
Tue.	31	7.10	3.30

TOTAL HOURS DURING 1906.

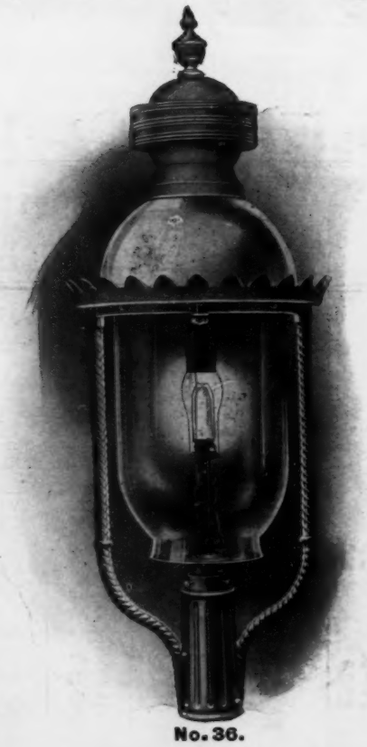
By Table No. 2.

	Hrs.Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.45

NEW YORK, 318 West 42d Street. BOSTON. 820 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, 218 La Salle Street. SAN FRANCISCO, 512 Ca[illegible] Street.

WELSBACH STREET LIGHTING COMPANY

....OF AMERICA....



No. 36.

Controls and Operates the **Welsbach System of Street Lighting,**

Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

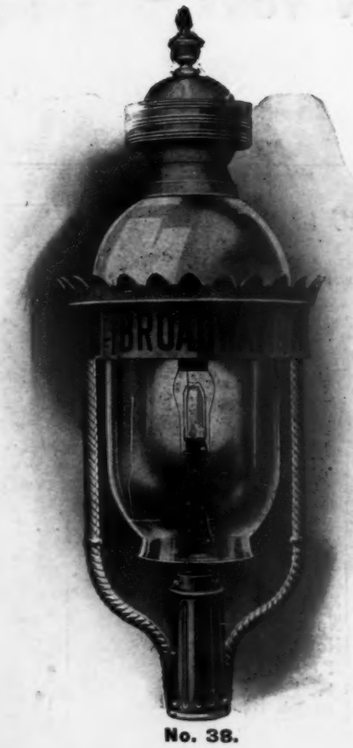
POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.



No. 38.

THE NEW NO. 7 WELSBACH DINING ROOM FIXTURE.

PRICE, EACH, COMPLETE, WITH SHADE, FRINGE, MANTLE AND CHIMNEY, $14. PER DOZ., $150. DISCOUNT, 50 PER CT.

Standard Length, 30 inches.
The New No. 7 Welsbach Dining Room Fixture, when ordered, will be sent complete, as follows:

- 1 No. 7 Harp Fixture and Brass Crown finished in Brushed Brass.
- 1 No. 66 Welsbach Burner (high candle power).
- 1 No. 4 Pilot By-pass.
- 1 No. 4197 Mantle — Intensive Brand.
- 1 No. 306 Chimney (air hole).
- 1 Fourteen-inch GREEN Art Glass Shade, with six-inch Green Beaded Fringe.

This fixture is being largely used by Gas Companies as a dining room fixture at the popular retail price of $10 complete, and is a great favorite for moderate sized two and three-story residences. In popularity and price it is unequalled.

VARIATIONS.

Finished in oxidized copper, oxidized brass, etc., 25 cents extra.

Shades in Ruby and Green--Ruby, Amber and other colors, without extra charge.

Special colors require a few days extra time to fill orders.

Green Shades will be shipped unless otherwise ordered.

WELSBACH CO.,

Salesrooms in All the Principal Cities of the United States.

Factories:

GLOUCESTER, N. J.
CHICAGO, ILL.

THE UNITED GAS IMPROVEMENT COMPANY

For the Year Ending December 31st, 1905, has been Awarded Contracts for 40 Sets of

Standard Double-Superheater Lowe Water Gas Apparatus.

PARTIAL LIST OF PLACES:

Catasauqua, Pa.
Plattsmouth, Neb.
Detroit, Mich. (2d contract).
Springfield, Ills.
Oneonta, N. Y. (2d contract).
Pottsville, Pa. (2d contract).
Evansville, Ind. (2d contract).
Lansdale, Pa.
Hempstead, N. Y. (2d contract).
New Britain, Conn.
New York, Mutual Co. (3d contract)
St. Louis, Mo. (4th contract).
Sioux City, Ia. (3d contract).
Amsterdam, N. Y.
Houston, Tex. (2d contract).
Hamilton, O. (2d contract).
Indianapolis, Ind. (2d contract).
Nanticoke, Pa.
Hazleton, Pa.
Mahanoy City, Pa.
Ludington, Mich.
Ossining, N. Y.
Lancaster, Pa.
Flushing, N. Y. (2d contract).
South Bend, Ind.
Fall River, Mass. (2d contract).
Minneapolis, Minn. (2d contract).

TOTAL SETS TO DECEMBER 31, 1905, ... 593
TOTAL DAILY CAPACITY TO DECEMBER 31, 1905, 463,780,000 CU. FT.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
H. D. ABERNETHY, Sec.

J. H. Gautier & Co.

Greene & Essex Streets,
Jersey City, N. J.

MANUFACTURERS OF

CLAY GAS RETORTS, FIRE CLAY TILES, FIRE BRICK and FIRE CLAY SPECIALTIES.

Ground Fire Clay, Fire Sand and Ground Fire Brick in Barrels and Bulk.

SOLE MANUFACTURERS OF THE

FLEMMING GENERATOR GAS FURNACE

Brooklyn Fire Brick Works,

OFFICE AND WORKS:
88 VAN DYKE ST., BROOKLYN, N. Y.
MANUFACTURERS OF

CLAY GAS RETORTS & SETTINGS, GENERATOR LININGS. SPECIALTIES.

ST. LOUIS GAS CONSTRUCTION CO.,

DESIGNERS AND BUILDERS OF

COAL GAS BENCHES,

SPECIAL HIGH GRADE REFRACTORY MATERIAL FOR BENCH SETTINGS AND WATER GAS LININGS.

SOLE AGENTS FOR

CHRISTY SETTINGS.

CORRESPONDENCE SOLICITED.

ST. LOUIS, MO.

STANLEY'S CELEBRATED FIRE CEMENT

For the Repair of Clay and Iron Retorts & Firebrick Work, for the Protection of Ironwork when Exposed to a High Degree of Heat, and Excellent for Mouthpiece Joints.

In General Use in the United States and Canada.
Unlike Expensive Preparations,
THERE IS ABSOLUTELY NO WASTE.
F. W. STANLEY,
150 Nassau St., New York, N. Y.

ALBERT J. WEBER, President and General Manager.

Established 1846.

Adam Weber Sons.

Manhattan Fire Brick and Enameled Fire Clay Retort Works.

Works at Weber, on the Raritan River. Middlesex County, New Jersey.

GENERAL OFFICES:
Park Row Building, New York City.

Modern Coal Gas Benches,

With either Horizontal or Inclined Retorts, Half-Depth and Full-Depth Recuperative Furnaces.

ADAM WEBER PATENTS

STANDARD BENCH IRONWORK.

Linings for Water Gas Apparatus, High Grade Fire Brick of All Shapes and Sizes, Ground Fire Clay, Ground Fire Brick in Bulk or in Barrels.

ISAAC C. BAXTER, President.
Works.
LOCKPORT STATION, PA.

ESTABLISHED 1864.

JAMES GARDNER, JR., CO.,

Successor to WILLIAM GARDNER & SON.

PETER YOUNG, Secretary and Treas.
Address all communications to
JAMES GARDNER, JR., CO., Room 202 Lewis Bldg.
PITTSBURGH, PA.

Fire Clay Goods for Gas Works.

ESTABLISHED 1868.
L. N. RANCKE, Vice-Pres. & Mgr. F. SCHIAFFINO, Sec'y & Treas.

BALTIMORE RETORT & FIREBRICK CO.

BALTIMORE, MD.,

Manufacturers of all Material for the Construction of Coal Gas Benches.

HALF AND FULL DEPTH AND FREE FIRING BENCHES,

All styles of which we have in operation, equipped with the BEST of LATEST IMPROVEMENTS, proving our claim for SUPERIOR QUALITY and EFFICIENCY.

INCLINES—We have in SUCCESSFUL OPERATION benches of Inclined Retorts, MANUFACTURED and ERECTED by us.

WALDO BROS., 102 MILK ST., BOSTON, MASS.,
Agents for New England States.

LARGE FACILITIES—Correspondence Solicited.
RAIL and WATER CONNECTIONS to ALL POINTS.

NATIONAL PYROGRANIT COMPANY,

MANUFACTURERS OF

Fire Brick, Tiles, Special Shapes, etc.

NEW YORK OFFICE:
17 Battery Place, New York.

WORKS:
South River, N. J.

ESTABLISHED 1856.

HENRY MAURER & SON,
Manufacturers of

High Grade Firebrick, Blocks, Tiles, ETC.,

Works: Maurer, N. J. Office: 420 E. 23d St., N. Y. City.

GEROULD'S IMPROVED RETORT CEMENT.

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

Price List, f.o.b. PITTSBURGH, PA.
In Casks, 400 to 800 pounds, at 5 cents per pound.
In Kegs, 100 to 200 " " 6 " "
In Kegs less than 100 " " 7 " "

C. L. GEROULD,
1200 Bank for Savings Bldg., Pittsburgh, Pa.

FIELD'S ANALYSIS FOR THE YEAR 1905.

An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland. Being the 37th year of publication. Compiled and arranged by JOHN W. FIELD, Sec'y and Gen. Mgr. of The Gas Light and Coke Company, London. Price, $5. For Sale by
A. M. CALLENDER & CO., 42 Pine St., New York City.

JOHN DELL,
President and General Manager.

MISSOURI FIRE BRICK CO.,

ESTABLISHED 1882.

MANUFACTURERS OF

Gas Retorts, Bench Settings, Fire Brick, Cupola Linings, Etc.

We are the **Exclusive Agents** *for the* **Mitchell Patent Benches,** *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* **Rear Clinkering.** **The Mitchell** *is the* **Original Coal Firing Bench.** *We also Erect Plain Benches with* **One** *to* **Six Retorts.**

YOUR CORRESPONDENCE IS RESPECTFULLY SOLICITED.

City Office: *411 Olive Street, Continental Bank,* ST. LOUIS, MO.

Bronder Patent Stoking Machinery.

Three-Scoop and Three-Rake Charging and Discharging Machines are operating in New York, Newark, N. J., Philadelphia, Worcester, Mass., Mt. Vernon, N. Y., Toronto and Montreal, Canada.

Four-Scoop and Four-Rake Charging and Discharging Machines are operating in Detroit, Mich.

These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

Hot Coke Conveyor, Quencher and Steam Exhauster, operating in Toronto, Canada, working in water-sealed flue, rollers being protected from heat and grit.

COAL CRUSHERS, CONVEYORS AND BINS. TURNTABLES FOR MACHINES.

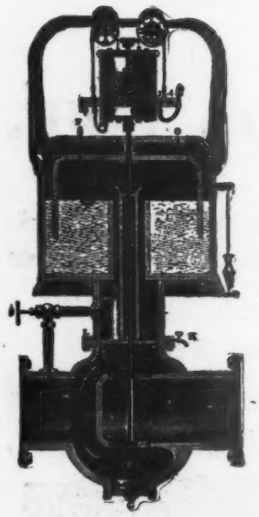
Labor-Saving Machines for Handling Coal and Coke from Coal Cars to Coke Yard or Bins, a Specialty.

G. A. BRONDER,

Contracting Engineer and Builder,

229 BROADWAY, NEW YORK.

CONNELLY IRON GOVERNOR CO.,



Design, Construction and Extension of

COAL OR WATER GAS PLANTS,

Automatic, Balance, High Pressure and Service Governors,

Roots Improved Gas Exhausters,

Iron Sponge, Purifying Material for Gas Purification, Jones Jet Photometers, Pressure Registers, etc.,

INSTALLATION OF SMOKELESS TAR BURNING SYSTEM.

Reinforced Concrete Construction for all Purposes.

Wide Experience in High Pressure Installation and Extension,

GAS SPECIALTIES.

395 Broadway, NEW YORK.

295 West 22d Street, CHICAGO, ILLS.

PARKER-RUSSELL MINING AND MFG. CO.,

OF ST. LOUIS, MO.,

PROPRIETORS OF THE

OAK HILL GAS RETORT AND FIREBRICK WORKS.

ST. LOUIS OFFICE: 417 Pine Street. NEW YORK OFFICE: Aldrich Court, 45 Broadway.

WE MAKE A SPECIALTY OF WATER GAS LININGS AND CHECKER BRICK.

Half and Full Depth Benches of Our Own Design, Containing 6, 8 or 9 Retorts.

SLOPERS.—We have perfected plans of INCLINED RETORT BENCHES, designed to meet conditions prevailing in America, and constructed entirely of American materials.

We Build Benches Complete. Ready for Gas Making. Also,

RETORT HOUSES,

COAL and COKE CONVEYING MACHINERY.

Plans, Specifications and Estimates Cheerfully Furnished.

CORRESPONDENCE SOLICITED.

ALL CONTRACTS MADE AS OF ST. LOUIS, MO.

Gold Medals awarded by the Louisiana Purchase Exposition at St. Louis, for fireclay gas retorts, gas retort benches, firebrick and setting tiles.

Newbigging's Handbook for Gas Engineers and Managers. Price, $6.50 For Sale by A. M. Callender & Co., 42 Pine St., N. Y. City.

JAMES D. PERKINS, President. F. SEAVERNS, Treasurer.

THE PERKINS COMPANY,

228 and 229 Produce Exchange, New York City.

Ocean Mine Youghiogheny Gas Coal,
Old Kentucky Shale and O. K. Boghead.

SHIPMENTS FROM NEW YORK, PHILADELPHIA, BALTIMORE AND NORFOLK.

BERWIND-WHITE COAL MINING COMPANY'S

Ocean Westmoreland Gas Coal.

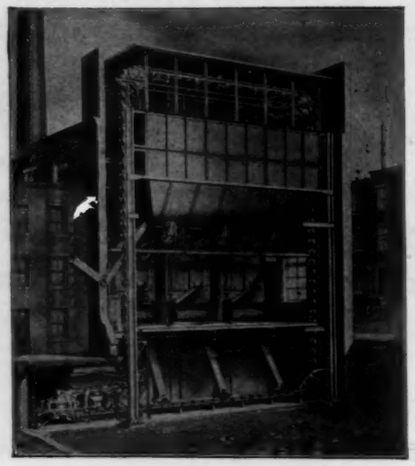
Offices:
Washington Building, New York.
Betz Building, Philadelphia.

STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming.

A. C. M. AZOY, General Agent, 1 Broadway, New York.

JEFFREY COAL ELEVATING AND STORAGE EQUIPMENT,

Designed to meet requirements.



Cleveland Arcade Installation.

Let us submit plans and estimates free, with Catalogues on

ELEVATING,
CONVEYING,
CRUSHING,
SCREENING,
POWER-TRANSMITTING
MACHINERY.

THE JEFFREY MANUFACTURING COMPANY, Columbus, Ohio, U. S. A.
New York, Chicago, Boston, Pittsburgh, St. Louis, Denver.

BINDER for the JOURNAL.

Price, $1.00.
A. M. CALLENDER & CO., 42 Pine Street, N.Y.

POOLE ON FUELS.

THE CALORIFIC POWER OF FUELS.
By HERMAN POOLE, F.C.S.

Second Edition. Price, $3. For Sale by
A. M. CALLENDER & CO., 42 PINE ST., N.Y. CITY.

FRED. BREDEL, President. A. A. MOONEY, Vice-President, O. W. GREENSLADE, Secretary and Treasurer.

FRED. BREDEL COMPANY,

ENGINEERS AND BUILDERS OF GAS PLANTS.

Inclined Benches, own system, Recuperative Furnaces, Exhausters, Exhauster Governors, Condensers, Washers, Coolers, Wet Purifying Plants, Purifiers, Oxide Elevators, Hydraulic and Dry Coke Conveyors.

Special High Grade Material for Recuperative Furnaces.

Licensees for ARROLL-FOULIS Charging and Discharging Machines and FRONHAUSER Coke Conveyors. OFFICE, 405 KEENE ST. MILWAUKEE, WIS.

KELLER ADJUSTABLE COKE CRUSHER

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,
Sec. & Supt. Gas Lt. & Coke Co
Columbus, Ind
Correspondence Solicited.

BAXTER & YOUNG,

CONTRACTING AND CONSULTING GAS ENGINEERS.

Examination and Values Ascertained of Artificial and Natural Gas Properties.

COMPLETE GAS WORKS ERECTED.

Artificial and Natural Gas Mains Furnished and Laid.

GAS PROPERTIES PURCHASED.

OFFICE: WAYNE COUNTY BANK BUILDING,
Rooms 201 & 202. DETROIT, MICH.

Geo. Shepard Page's Sons.

GAS MACHINERY.

Correspondence Solicited.
180 Fulton Street, New York City.

DAVID LEAVITT HOUGH,

Consulting Engineer

AND

CONTRACTOR,

PARK ROW BUILDING, N. Y.

EDMUND H. McCULLOUGH, President. B. C. ADAMS, Vice-President. CHAS. F. GODSHALL, Treasurer. HENRY WHARTON, Secretary. C. B. NICHOLS, Assistant Secretary

THE WESTMORELAND COAL CO.

Chartered 1854.

Mines situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

POINTS OF SHIPMENT:

PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J., WATKINS (SENECA LAKE), N. Y.

Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

Principal Office, 224 South 3d St., Phila., Pa.

SUN COMPANY,

PRODUCER, REFINER, SHIPPER AND EXPORTER OF

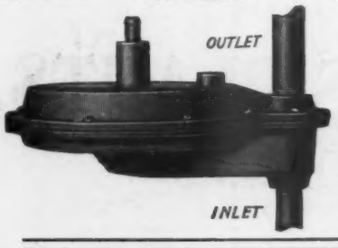
Petroleum and All Its Products.

Pittsburg, Pa., and Philadelphia, Pa.

THE SUN OIL CO.

Gas Oil, Gas Naphtha,
Refined Oil, Lubricating Oils.

Toledo, O., and Pittsburg, Pa.



REYNOLDS HIGH PRESSURE GAS GOVERNORS.

Our Governors Reduce 30 or 40 Pounds Pressure to 2 Inches Water Pressure.

WE MAKE ALL SIZES OF

DOUBLE DISTRICT GOVERNORS, INDIVIDUAL HOUSE SERVICE AND LOW PRESSURE GOVERNORS.

Write for Catalogue and State what you Need.

JOHNSON-REYNOLDS CO.,
ANDERSON, IND., U. S. A.

Standard Oil Company,

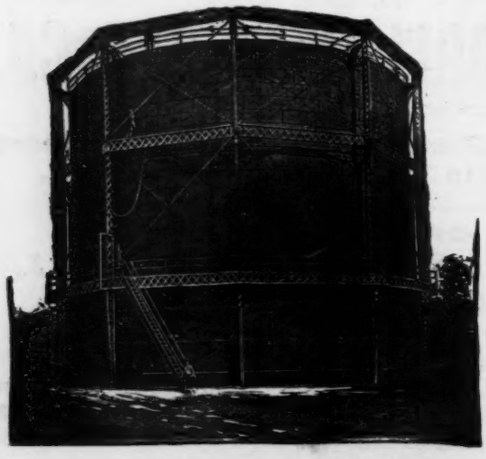
GAS NAPTHA DEPARTMENT.

GAS NAPTHA.

GAS OIL.

Correspondence Solicited.

26 Broadway, New York City.



DAVIS & FARNUM MFG. CO.,

Principal Office and Works, Waltham, Mass.

Single, Double and Triple-Lift Gasholders of any Capacity. Tubular, Pipe and Sinuous Friction Condensers of all Sizes.

Steel Tanks for Gasholders, Iron Roof Frames and Floors, Purifying Boxes, Center Seal or Valve Connections, Bench Work, Reversible Lime Trays.

Self-Sealing and Pressed Steel Mouthpiece Lids.

Coke Barrows, Coal Wagons, and all Apparatus Requisite for a Complete Gas Works.

Also, Gas and Water Pipe, Flanged Pipe, Sugar House Work, and Special Castings of all Descriptions.

FRANK D. MOSES,

Telephone, 1503 D — TRENTON, N. J., — Telephone, 1503-D

Constructing Engineer and Contractor.

Estimates Furnished on any kind of Work in Connection with Gas or Water Plants.

SPECIAL ATTENTION GIVEN TO THE REMODELLING AND EXTENDING OF THE PROPERTIES OF WORKS NOT UP-TO-DATE.

CORRESPONDENCE SOLICITED.

KERR MURRAY MANUFACTURING COMPANY,

Engineers and Manufacturers

APPARATUS FOR COAL GAS PLANTS,

SINGLE AND DOUBLE-LIFT GASHOLDERS AND STEEL TANKS,

Latest Improved

ROTARY EXHAUSTERS, P. & A. TAR EXTRACTORS, AMMONIA WASHERS,

CONDENSING, SCRUBBING AND PURIFYING APPARATUS.

Street Specials and Valves.

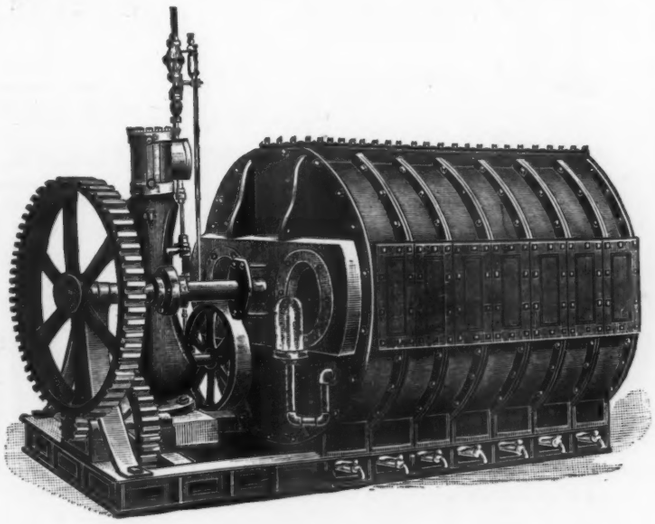
ADDRESS:

KERR MURRAY MANUFACTURING COMPANY, {FORT WAYNE, IND.

BARTLETT, HAYWARD & CO.

BALTIMORE, MD.

Designers and Builders of Gas Works.



Sole Lessees the Wilkinson Water Gas Process.

PATENT STANDARD WASHER-SCRUBBER.

The best apparatus for the extraction of all Ammonia and a large proportion of Carbonic Acid and Sulphureted Hydrogen. The Scrubber has been materially improved and is provided with patented Wooden Segmental Grids, instead of Metallic Disks, thus reducing the weight on shaft and power for operating same.

Coal and Water Gas Installations of the Most Modern and Complete Types.

BENCHES WITH INCLINED RETORTS.

System Stettiner Chamotte Fabrik, Actien Gesellschaft, of Stettin, Germany.

GASHOLDERS OF ALL SIZES.

General Western Agents, THE LLOYD CONSTRUCTION CO., of Detroit, Mich.

QUINTARD IRON WORKS,

N. F. PALMER,

Foot of 12th St. & East River, New York,

MANUFACTURERS OF

GAS APPARATUS.

Complete Works Erected.

FREDERICK W. FLOYD, Engineer.

ALEX. C. HUMPHREYS, M.E., M. Inst. C.E. ARTHUR G. GLASGOW, M.E., M. Inst. C.E.

HUMPHREYS & GLASGOW,

CONSULTING ENGINEERS.

BANK OF COMMERCE BLDG., 31 Nassau Street, New York.

38 VICTORIA STREET, London S.W., England.

ADVICE AS TO EXTENSION AND RECONSTRUCTION OF GAS AND ELECTRICITY PLANT.

COMPLETE EXAMINATIONS MADE.

PROPERTIES PURCHASED.

R. D. WOOD & CO.,

400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

Hydraulic Work,

LAMP POSTS, VALVES, ETC.,

Gas Power Plants with Producers.

BUILDERS OF

Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

EARTHQUAKE AND FIRE

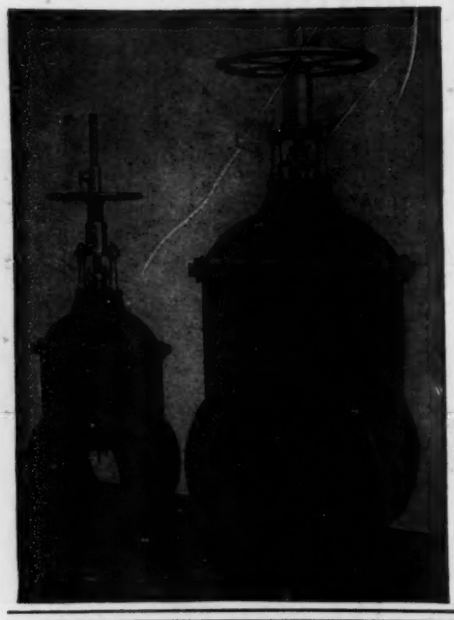
Destroyed our Perishable Effects and Rendered us Homeless,

BUT HAS

Failed to Destroy our Courage or Valuable Patent Rights Covering the Manufacture of Gas from Oil by our **Celebrated Lowe Crude Oil Water Gas Process.** We will very soon publish new address; meanwhile, just

CALIFORNIA LIGHT AND FUEL CO., San Francisco, Cal.

Do not hold back your inquiries---We are ready for business.



Double Gate Valves.

A LARGE STOCK ON HAND READY FOR PROMPT SHIPMENT.

These valves are provided with double discs or gates, and are tight with the gas pressure on either side of them.

The discs are so arranged as to be free from their seats when being opened or closed, and are operated by a quick-acting mechanism. The valve stem extends outside of the bonnet, and serves as an index, showing whether the valve is closed or open, and the amount of opening. They are made of the following dimensions:

Size.	8 Inches.	10 Inches.	12 Inches	16 Inches.	20 Inches.	24 Inches	30 Inches.	36 Inches.
Diameter of flanges.....	13 inches.	16 inches.	18 inches	22½ inches.	27 inches.	3 inches.	3[illegible]½ inches	44 inches.
Face to face of flange...	12 inches.	13 inches.	13 inches	14 inches.	17 inches	20 inches.	21 inches.	23⅞ inches.

For price and other information, apply to

THE CONTINENTAL IRON WORKS,

NEW YORK (BOROUGH OF BROOKLYN).

P. O. STATION G.

Directory of American Gas Companies, 1906.

Price, $5.00.

For Sale by

A. M. Callender & Co. 42 Pine St., N. Y.

THE STACEY MANUFACTURING COMPANY,

ENGINEERS FOR THE CONSTRUCTION OF COMPLETE GAS WORKS

GASHOLDERS AND STEEL TANKS

OF ANY SIZE AND DESCRIPTION,

And All Ironwork and Apparatus Required in a Gas Plant.

Also Oil Storage Tanks, Steel Roofs, Valves, Etc.

Makers of Apparatus for THE CHOLLAR PROCESS OF GAS PURIFICATION.

MAIN OFFICE AND WORKS, - - - Station P, Cincinnati, Ohio.
FOUNDRY AND CAST IRON WORKS, 289 Mill St., Cincinnati, Ohio.

RITER-CONLEY COMPANY,

GASHOLDERS, with or without Steel Tanks.

Purifiers, Condensers, Scrubbers, Oil Tanks, Smoke Stacks.

STEEL ROOFS and BUILDINGS.

PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.

GENERAL OFFICE: Pittsburg, Pa. EASTERN OFFICE: 39-41 Cortlandt St., New York City.

WE DON'T CARE WHO MAKES YOUR METERS

If you use the Reeves slot attachments on them. Any good make of meter combined with the Reeves attachment makes the most perfect prepay meter ever manufactured.

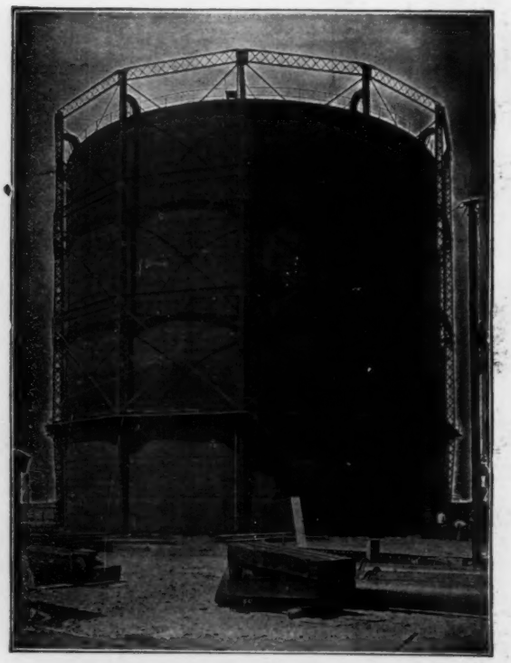
If your meter man does not handle the Reeves attachment we will supply you with the REEVES METER. Large capacity. Other important improvements. Unconditionally guaranteed.

REEVES MFG. CO., New Haven, Conn.

Newbigging's Handbook for Gas Engineers and Managers.

PRICE, $6.50.

A. M. CALLENDER & CO., 42 Pine Street, New York City.



Deily & Fowler,

39 Laurel Street, Philadelphia, Pa.

(ESTABLISHED 1842),

BUILDERS OF

GASHOLDERS,

Single-Lift or Telescopic,

With or Without Steel Tanks.

Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

CORRESPONDENCE SOLICITED.

The order for this Triple-Lift Holder and Steel Tank was received by the Logan Iron Works from the Union Gas Light Company, of East New York. The contract was completed and the Holder was in actual use in 90 days from receipt of order. Capacity of Holder, 500,000 cu. ft.

LOGAN IRON WORKS,

Brooklyn, N. Y.,

MANUFACTURERS OF

Single or Multiple-Lift

GASHOLDERS,

Complete, with Steel Tanks.

BENCHES, SCRUBBERS,
CONDENSERS,
PURIFIERS, IRON ROOFS,

AND ALL PARTS OF

GAS WORKS APPARATUS.

Contractors for
Complete Works.

FREDERIC EGNER,

Gas Engineer,

NORFOLK, VA.,

May be consulted with reference to estimates of cost of new, or appraising actual value of existing works; utility of proposed or patented processes; relative earning power to capitalization, and management.

ELECTRIC GAS LIGHTING.

How to install electric gas igniting apparatus, including the jump spark and multiple systems for use in houses, churches, theaters, halls, schools, stores or any large building. Also, the care and selection of suitable batteries, wiring and repairs.

By H. S. NORRIE.

Price, 50 Cents. Orders may be sent to

A. M. CALLENDER & CO., - - - 42 PINE STREET, NEW YORK CITY.

Established 1854.

D. McDONALD & CO.,

MANUFACTURERS OF

WET AND DRY METERS, STATION METERS AND METER PROVERS.

ALSO MAKERS OF

THE GLOVER PREPAYMENT METER.

The amount of gas delivered for the coin can be instantly and positively changed without removing the meter or replacing any parts.

The gas registered agrees absolutely with the amount purchased by the coin.

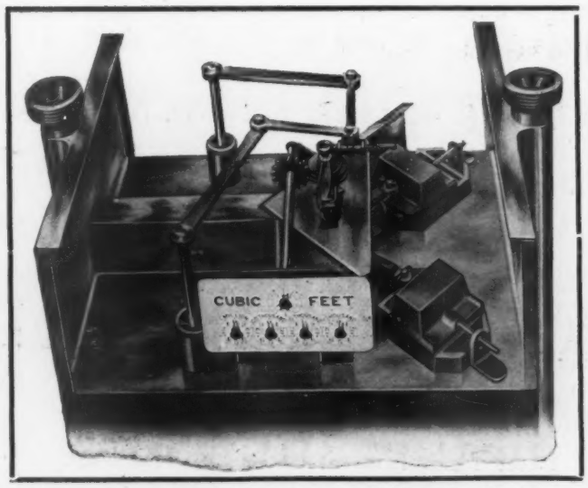
WE HAVE MADE AND SOLD IN THE UNITED STATES

OVER 120,000 OF THESE METERS,

ALL OF WHICH ARE GIVING PERFECT SATISFACTION.

Correspondence Solicited.

561 West Forty-seventh Street, NEW YORK. | 51, 53 & 55 Lancaster Street, ALBANY, N. Y. | Jefferson and Monroe Streets, CHICAGO.



Sectional view of Large Capacity Meter, showing enlarged valves and location of inlet gas channel on top of meter table, making it more accessible and allowing more room for the diaphragms.

A CRITICAL EXAMINATION

of the design and construction of the

Westinghouse Large Capacity

DRY GAS METER

will impress you with its merits.

An actual trial in service will convince you of its superiority.

May we have your trial order?

PITTSBURG METER COMPANY

EAST PITTSBURG, PA.

70 PER CENT.

Of Our Output is

PREPAYMENT GAS METERS.

We have fitted up over **16,000** Idle, Regular Meters with our

PREPAYMENT ATTACHMENT.

Can be attached to any make of meter.

NATHANIEL TUFTS METER COMPANY, 8 MEDFORD STREET, BOSTON, MASS.

MARYLAND METER CO.,

BALTIMORE, North and Saratoga Streets. **CHICAGO, 1307 Railway Exchange.**

CONSUMERS' AND STATION METERS, PRESSURE GAUGES, ETC.

SPECIAL ATTENTION GIVEN TO ALL REPAIR WORK.

"Have you Seen our Complaint Meter?"

WHEN YOU SEND REPAIRS TO US

They can be changed to Prepayment, Prepayment and Beal Straight-reading, or Beal Straight-reading only. Good job. Good time. Good people. Write us.

KEYSTONE METER CO., Royersford, Pa.

IMPROVED GAS METERS.

MORE CAPACITY.
PROVE ACCURATE.
REMARKABLE RESULTS.
OVER 16,000 IN USE.
VERY SATISFACTORY.
EFFICIENT AND ECONOMICAL.
DO YOU USE THEM?

PREPAYMENT METERS. **ATTACHMENTS.**

NEW YORK IMPROVED METER CO., 306-308-310 E. 47th St., New York City.

LB S '06

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Wet and Dry Gas Meters, Station Meters, Meter Provers, Photometrical Apparatus, Gauges,

PREPAYMENT METERS,

REGULAR METERS REFITTED WITH PREPAYMENT ATTACHMENTS.

HELME & McILHENNY,

Established 1848. **1339 to 1349 Cherry Street, Philadelphia, Pa.**

MANUFACTURERS OF

Wet and Dry Gas Meters, Station Meters, Provers, Gauges, Etc.

METERS REPAIRED

PREPAYMENT GAS METERS.

Our Own Patents. Strong. Simple. PROMPT ATTENTION. CORRESPONDENCE SOLICITED.

METRIC METAL COMPANY,

MAKERS OF

GAS METERS for NATURAL and ARTIFICIAL GAS.

Special Attention given to Repairing METERS of all Makes.

FACTORY AT ERIE, PA.

FOR SALE, NASH GAS ENGINE.

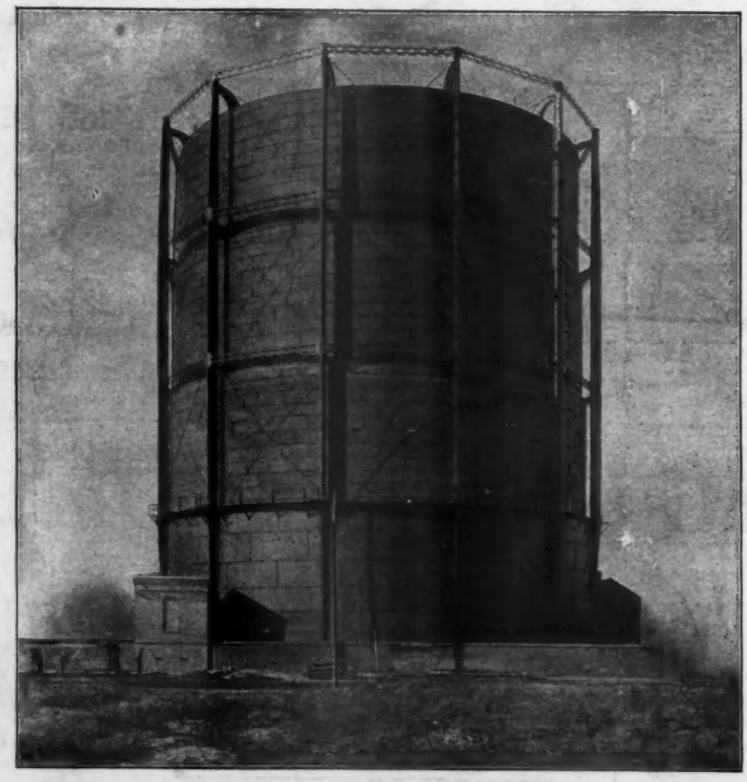
Fifty-horse power, 3-cylinder, latest type. Made by the National Meter Company. Engine can be run either on gas or gasoline. In use less than a year and as good as new. A desirable engine where natural gas is abundant and close regulation is not expected. For further particulars address

BUHL STAMPING CO., Detroit, Mich.

NO GAS COMPANY CAN OPERATE ECONOMICALLY

ON A LIMITED

HOLDER CAPACITY



WRITE US FOR PRICES AND DESIGNS

THE WESTERN GAS CONSTRUCTION CO.,

FORT WAYNE, IND.

NEW YORK, 1707 WALL ST. EXCHANGE BLDG.

SAN FRANCISCO, CAL., 704 CASTRO ST.